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Founded in 1944, the Council for British Archaeology promotes archaeology for all. It makes the case for safeguarding our archaeological heritage, and increasing public participation and understanding. It has a growing membership of individuals of all ages and over 600 organisations, and partnerships with Archaeology Scotland, CBA Wales/Cymru and CBA English Regional Groups. The CBA is an environmental charity registered in England & Wales (287815) and Scotland (SC041971), and a company limited by guarantee (1760254)

On the cover: Excavation at Scremby, Lincolnshire, is drawing attention to a side of Anglo-Saxon cemeteries sometimes overshadowed by men with swords and shield – the women. See feature on page 32

From the editor

In this issue we report a major new study of ancient DNA obtained from excavated human remains. The era is a significant one in Britain's history, when farming first arrived and hunter-gatherers with millennia of their own antiquity were confronted with fundamental choices.

Applying ancient genetics to the past is still a new enterprise. It began with individuals, one in particular – Richard III – drawing huge public interest (feature May/Jun 2013/130). In 2016 we covered four separate aDNA projects which focused on 23 Iron Age, Roman and Anglo-Saxon people (Nov/Dec 2016/151). Now whole populations are targeted. Last year we showed how the aDNA of 155 individuals revealed a dramatic change associated with the arrival of Beaker artefacts and values (May/Jun 2018/160). More revelations are to come; you can read about early insights from Viking Age aDNA in this issue's News.

Genetics can surprise us with previously undocumented genealogies and population changes. But only archaeology can reveal the lives and motivations behind events, and the impacts on culture and technology. Science and excavation make a powerful team. In revolutionary times, *British Archaeology* will be here to guide you.

mike pitts

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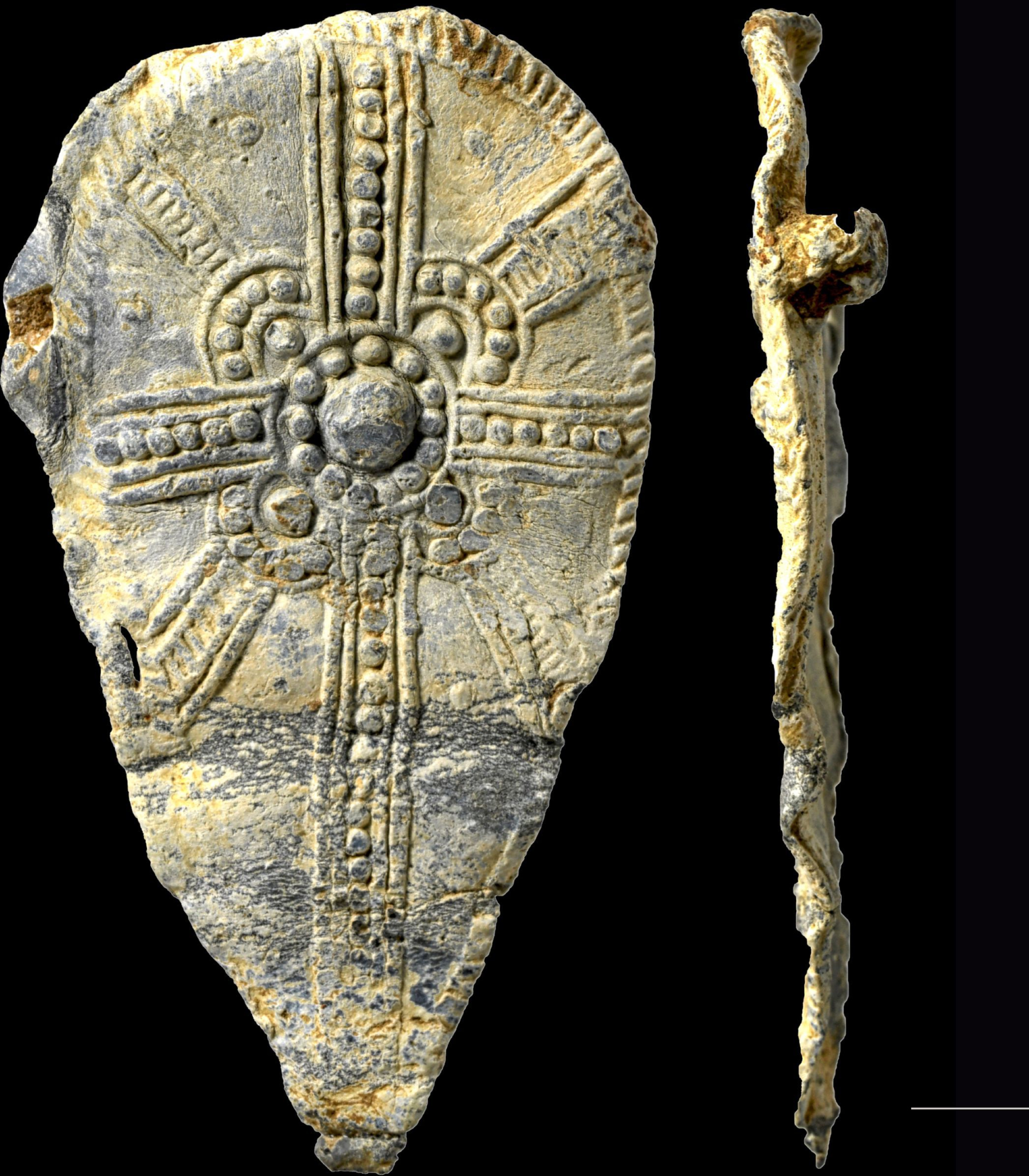
This issue's contributors include

James Dixon
is a heritage consultant specialising in public archaeology, and co-editor of *Post-Medieval Archaeology*. On page 26 he sets out thoughts inspired by the fire at Notre-Dame de Paris

Lisa Brundle
is finds liaison officer in Lincolnshire, and helping to prepare the excavation report on Scremby Anglo-Saxon cemetery. She offers some early insights on page 32

Rose Ferraby
is an archaeologist and artist. She has been working with artist Rob St John on an audio and art exploration of Aldborough Roman town, as they explain on page 46

Radiocarbon dates
Unless otherwise noted, ^{14}C dates in British Archaeology are calibrated at 95% confidence (cal AD or cal BC, expressed as AD or BC), and rounded out after Mook (1986). See wikipedia.org/wiki/Radiocarbon_dating



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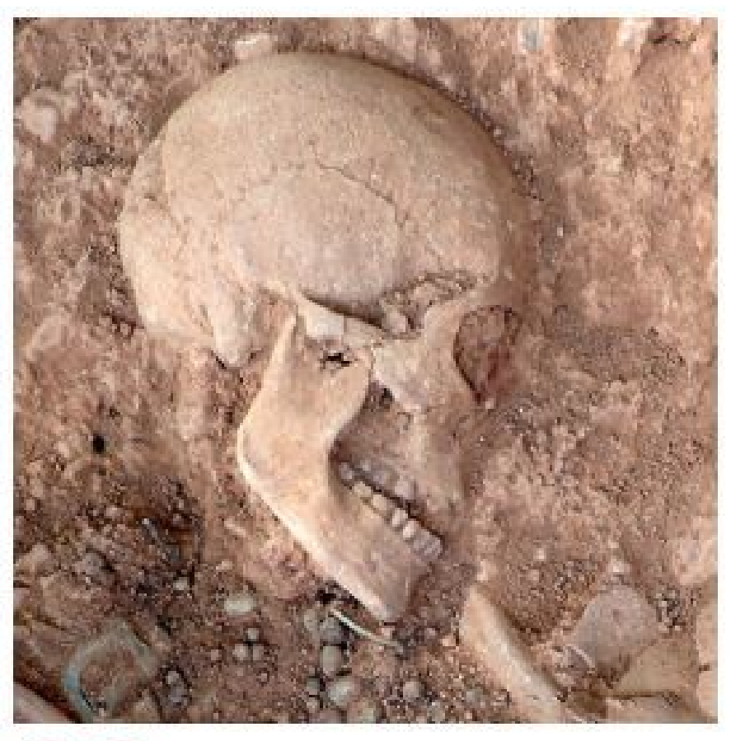

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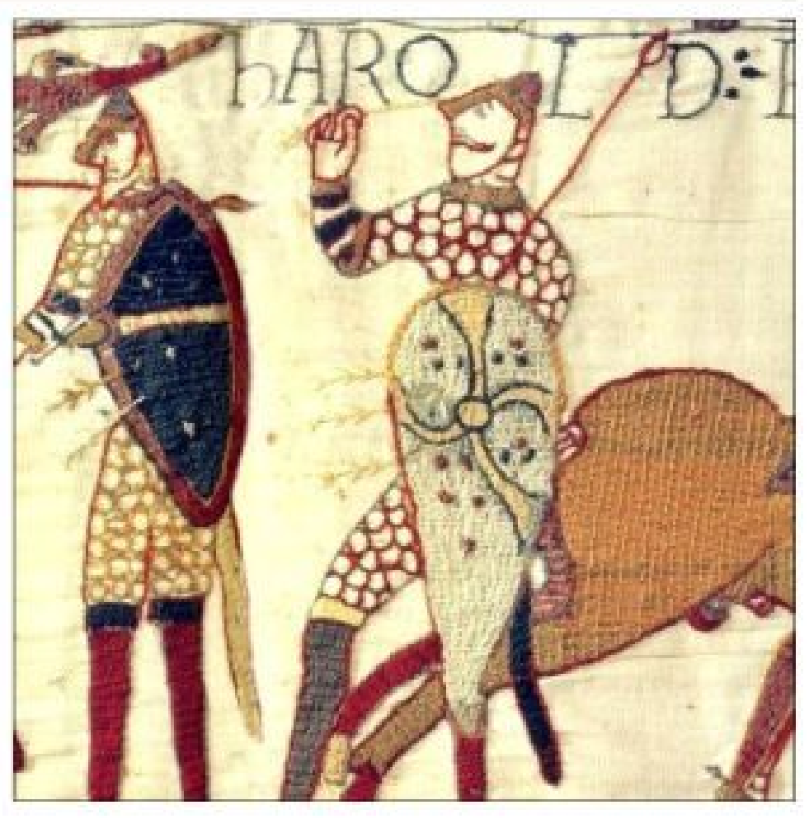


FIRST SIGHT
This lead alloy shield, only 5cm long and missing its horizontal pin, is a brooch that someone wore between AD1050 and 1175 – in other words, around the time of the Battle of Hastings (1066) and the later manufacture of the Bayeux Tapestry, where similar kite-shaped shields are depicted (inset). It was found near Benniworth, Lincolnshire. Photography Portable Antiquities Scheme

I don't think any of us anticipated the level of enthusiasm that the Mithraeum has generated, and it doesn't seem to be slowing down. Visitors of all ages and backgrounds, all coming for different reasons, but all inspired by this story of London. We're definitely very passionate about that legacy.

Jemma Read, global head, Bloomberg Philanthropy & Engagement, talks about London Mithraeum Bloomberg SPACE, in the CIfA 2019 Yearbook

New houses throw light on Scotland's first farmers

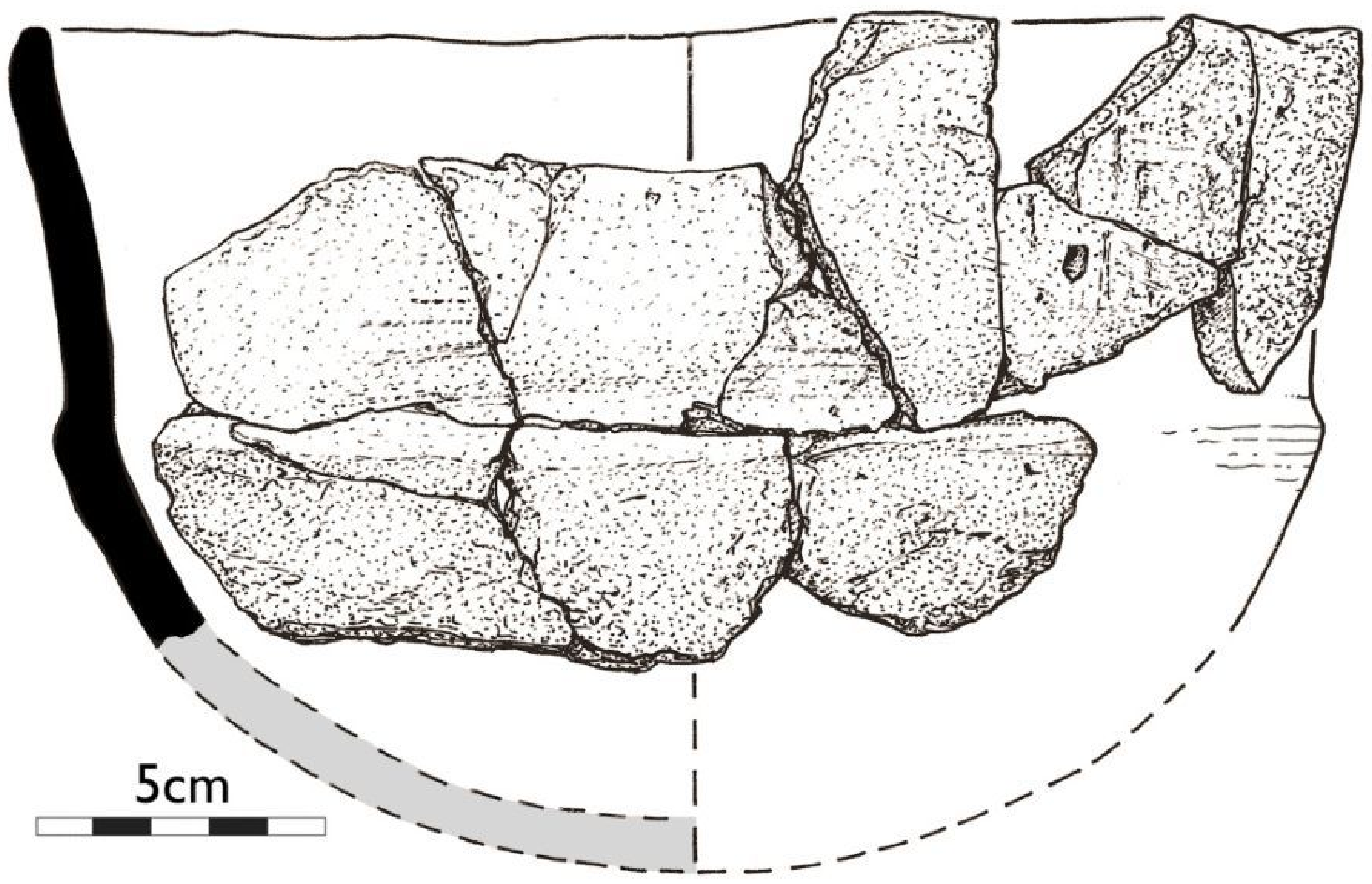
News is written by Mike Pitts

Right: An archaeologist finding quantities of pottery in a Neolithic pit at Kirkton of Fetteresso

GUARD ARCHAEOLOGY (4)

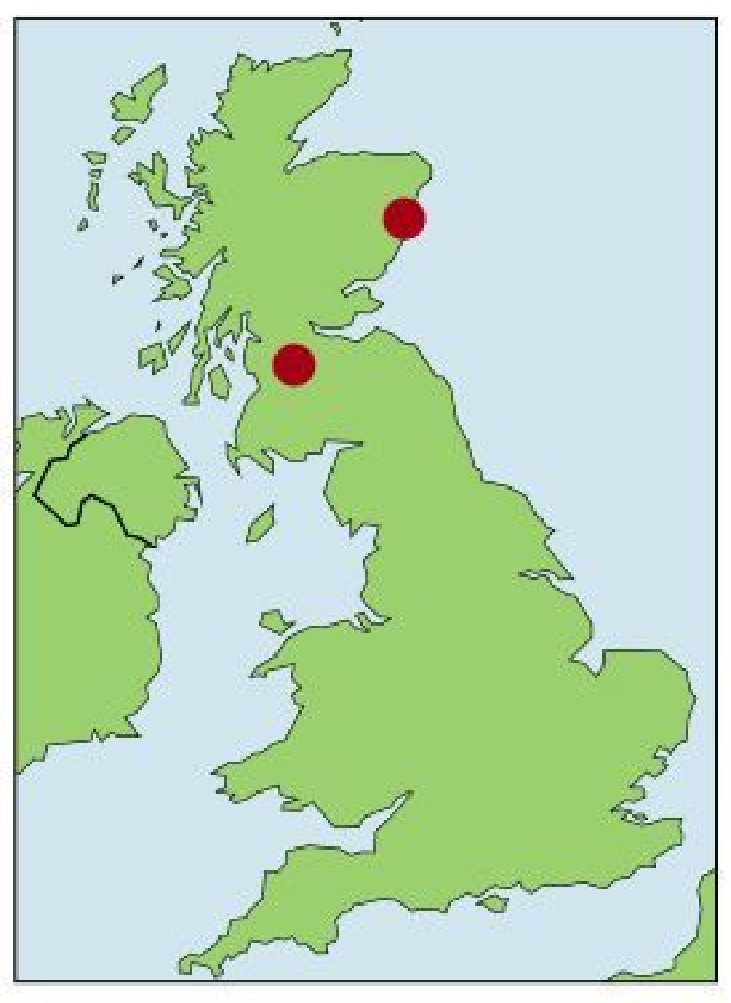
Two recent excavations have added to a growing picture of Scotland's first farmers, one producing some of the earliest dated pottery in the UK, and the other a significant collection of volcanic pitchstone, at least 70km from its source on the Isle of Arran.

Both excavations were conducted in 2015 in advance of new housing developments. At Kirkton of Fetteresso, near Stonehaven, Aberdeenshire, pits, postholes and hearths representing at least three structures were revealed with artefacts of Late Bronze Age, Iron Age and early medieval/Pictish date. In addition a team from Cameron Archaeology found a single Neolithic pit, 1.25m across and 40cm deep. From the blackened earth they retrieved 306 pottery sherds, three of the four sizable flint artefacts from the whole site, including a scraper/knife, and burnt human bone. The pottery, of which 15 vessels could be reconstructed, is almost all of a distinctive Early Neolithic style known as Carinated Bowl. A single radiocarbon date, of 3955–3770BC, is very early and would be consistent with people having recently arrived by sea from the continent. Carinated Bowls are skilfully made, mostly undecorated vessels with gently curving sides; the technology would have been alien to Mesolithic hunter-gatherers, who may still have been active in some parts of the landscape at this time.



Above: A Carinated Bowl from Kirkton, among Scotland's oldest pottery

Right: A small blade core from Colinhill, made from pitchstone, a volcanic glass from Arran



Alison Sheridan, principal archaeological research curator at National Museums Scotland, has pointed to several finds of this pottery style beside major river systems in Aberdeenshire, suggesting the area may have been one of those where immigrant farming groups first arrived in Scotland. Similar quantities of sherds to those at Kirkton, representing at least 34 Carinated Bowls, were found in 2005 on the floor of a Neolithic house dated to around 3750–3700BC, beside the River Dee, at Garthdee Road, Aberdeen. The householders may have been second- or third-generation descendants, suggested Sheridan, of settlers who established a base nearby at Warren Field, Crathes, where two large rectangular halls have been identified.

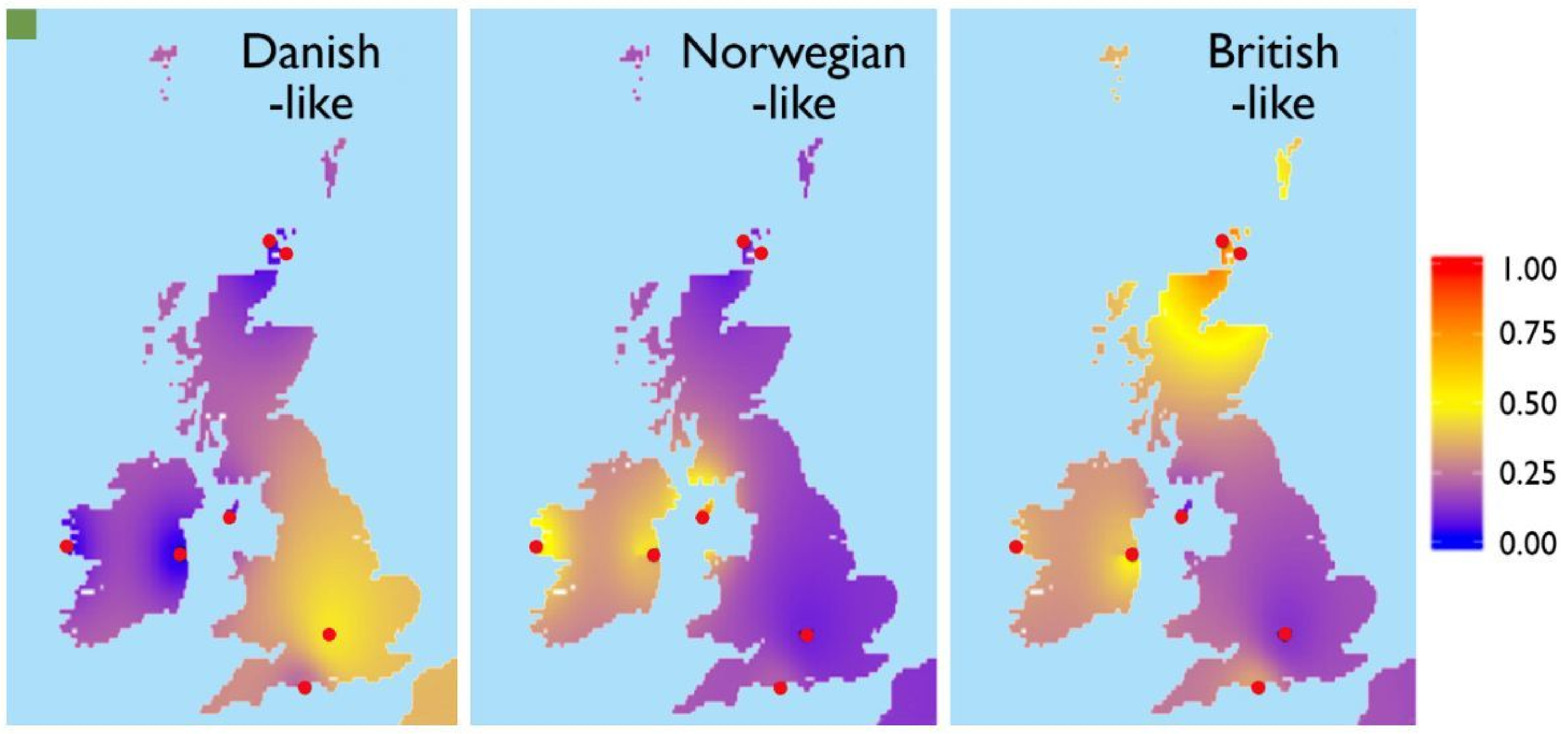
Buried burnt human bone from this era is unusual but not unprecedented. A pit excavated in 2012 near Duns, Scottish Borders, contained a few sherds of Carinated Bowl with cremated bone radiocarbon dated to around 3850–3550BC.

The other excavation, by GUARD Archaeology, was across Scotland at Colinhill, Strathaven, South Lanarkshire. Here a Bronze Age settlement with roundhouses was preceded by extensive earlier activity. No Neolithic structures could be recognised, but there were several pits, variously containing sherds of Carinated Bowls and Middle Neolithic Impressed Ware pots, with radiocarbon dates ranging from around 3700BC to 3200BC. Notably, a small collection of stone-tool-making debris (and a single arrowhead) included 11 pieces of pitchstone.

Pitchstone, the UK's only volcanic glass and a prized stone age material, occurs uniquely on the Isle of Arran, in the Firth of Clyde 70km to the west of Colinhill by the most direct route, 20 of those by sea. Pitchstone was not used in the Mesolithic, says Torben Ballin, so it seems to have been discovered by Early Neolithic farmers, indicative of their success in understanding and exploiting what for a time would have been a new, unknown land. ■

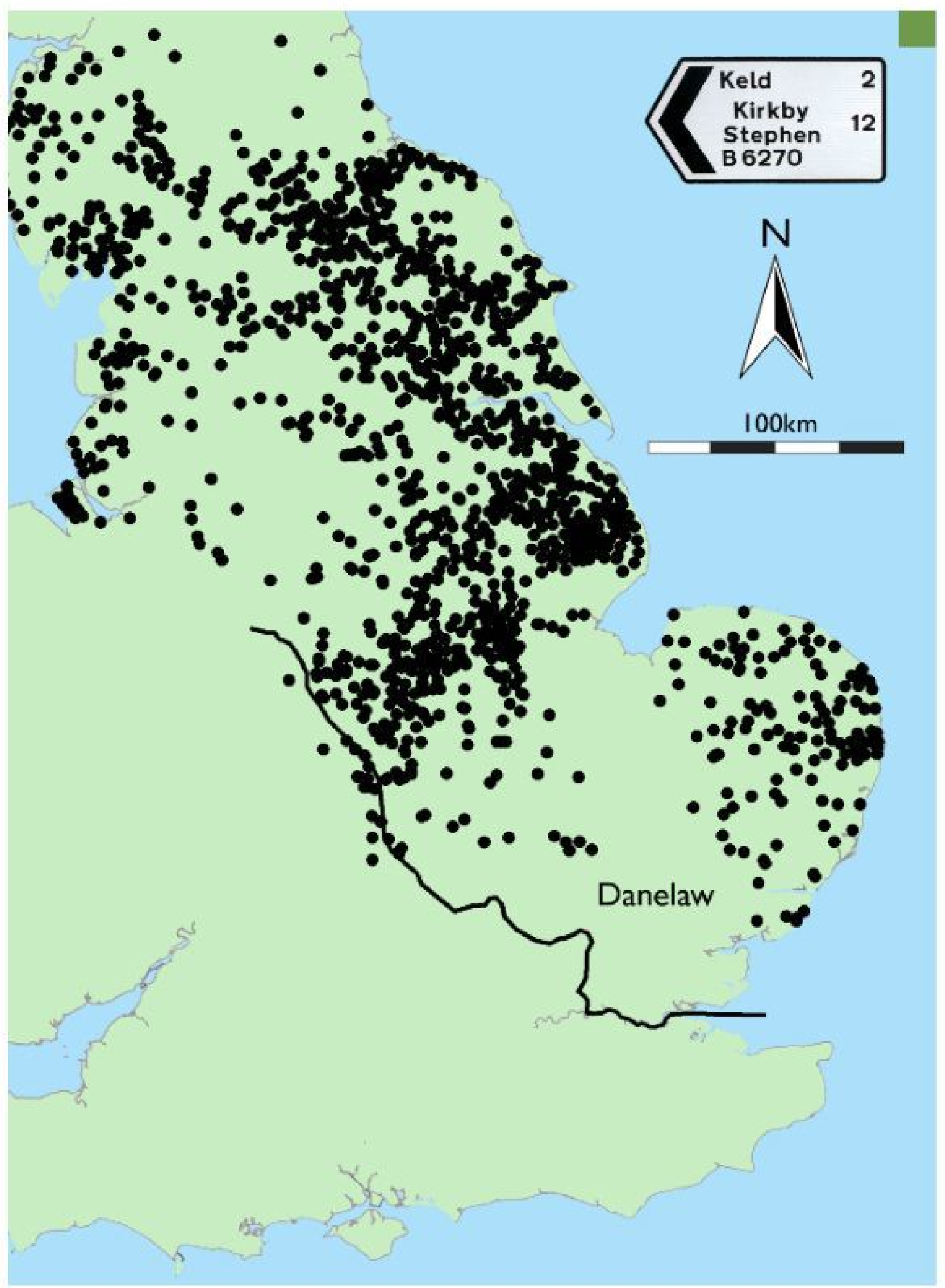
Right: Excavation begins at Colinhill in 2015

Ancient DNA reveals insights into Viking diaspora



Left: Three components of Viking and non-Viking ancestry across Britain and Ireland in ancient remains (other components, including "Swedish-like", are not significantly present); sites sampled in the new aDNA study are marked by red dots

MARGARYAN ET AL 2019/BIORXIV/CBA, CBA



Left: Scandinavian placenames, a legacy of Viking settlement, are restricted to the north and east of England (see feature Jul/Aug 2017/155)

A substantial study has for the first time considered ancient DNA evidence for the Viking diaspora, an era of travel and raiding by Scandinavian groups who reached as far as western Eurasia, Greenland and North America. The Viking Age, around AD800–1050, saw profound changes in Britain and Ireland, but the extent to which migrants settled and interacted with local populations has been hard to pin down from archaeology and historical records. A mass of new data will take time to be understood and critiqued, but already insights are apparent.

Using excavated human remains, scientists sequenced the genomes of 442 people from across Europe and Greenland. The work was conducted by a team affiliated to 64 institutions, and has been released ahead of peer review by lead author Ashot Margaryan, at the University of Copenhagen and the National Academy of Sciences, Armenia, and 84 colleagues, among them 13 geneticists and archaeologists from Britain and Ireland.

The study concludes that the era was characterised by substantial foreign engagement: distinct Viking populations influenced the genomic makeup of different regions of Europe, while Scandinavia also experienced increased contact with the rest of the continent – western regions show return migration particularly from the British Isles.

The first signs of change occurred before this began, when new gene flow is seen reaching into Scandinavia from the south and east. There was already regional genetic structure within Scandinavia, so that different origins can be observed for Viking interactions elsewhere: in the Baltic these are mostly Swedish, in Ireland, Iceland and Greenland they are Norwegian, and in England – where no remains were sampled in the north – they are Danish.

Surprisingly, people in Orkney whose remains are associated with Viking culture turned out not to have a simple Scandinavian origin. Of samples from three sites (Newark, Buckquoy and Brough Road, Birsay) only two displayed around half Norwegian and Danish ancestries respectively, while four have what the scientists call "native British" ancestry, suggesting they had descended from Pictish populations.

Far left: Excavating a mass grave near Weymouth, Dorset, where around 50 men identified archaeologically as Vikings had been brutally beheaded

In some cases relationships between individuals could be seen. Two Viking ship burials were recently excavated near Salme, Estonia, from which the remains of 41 men were recovered, accompanied by rich grave goods. It has been suggested the men died in conflict. Four buried close to each other in the Salme II ship were brothers.

Remarkably, a man buried in a mass grave excavated in Oxford, identified by archaeologists with people who died in a massacre of Danes ordered by Ethelred the Unready in 1002, was related to a man whose remains were recovered from a cemetery at Galgedil in Denmark: they were half-brothers, nephew-uncle or grandson-grandfather. Another mass grave was sampled in the study, a pit near Weymouth containing the bodies of around 50 men (feature May/Jun 2014/136). Archaeologists had suggested that a few of these men might have been related, but the remains of only one of that group was sampled.

The report is published online with lengthy supplements by *bioRxiv* at http://dx.doi.org/10.1101/703405 ■

Below: Human remains, mostly male, stacked in a building at Repton, Derbyshire; recent study has linked these people directly to a historical report of the Viking Great Army in AD873 (see feature Mar/Apr 2018/159)

OXFORD ARCHAEOLOGY, MARTIN BIDDLE

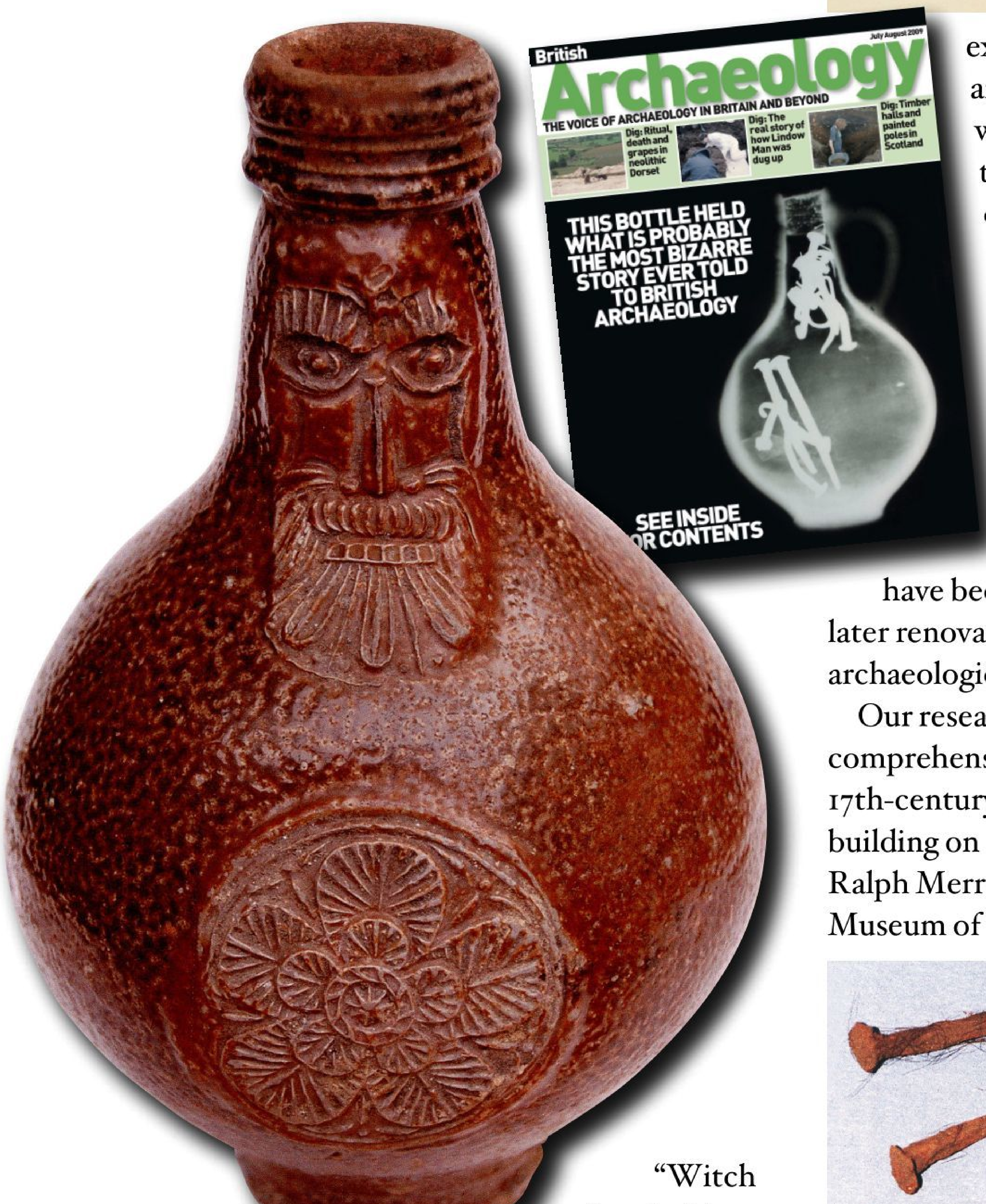
News+ is written by readers of British Archaeology

Bottles, magic and healing in 17th-century England

Nigel Jeffries, finds specialist, is principal investigator in a project to understand witch bottles, with Owen Davies and Ceri Houlbrook, who study magic, witchcraft, popular medicine and the material culture of healing. They'd like to hear from you:

Above: Nigel Jeffries examines pins from the Holywell Priory bottle

Begun in April, Bottles Concealed & Revealed is a three-year project funded by the Arts & Humanities Research Council (award AH/S002693/1) to recalibrate understandings of the English mid to late 17th-century "witch bottle" practice. The project is led by Nigel Jeffries at Museum of London Archaeology (MOLA), in collaboration with Owen Davies and Ceri Houlbrook at the University of Hertfordshire.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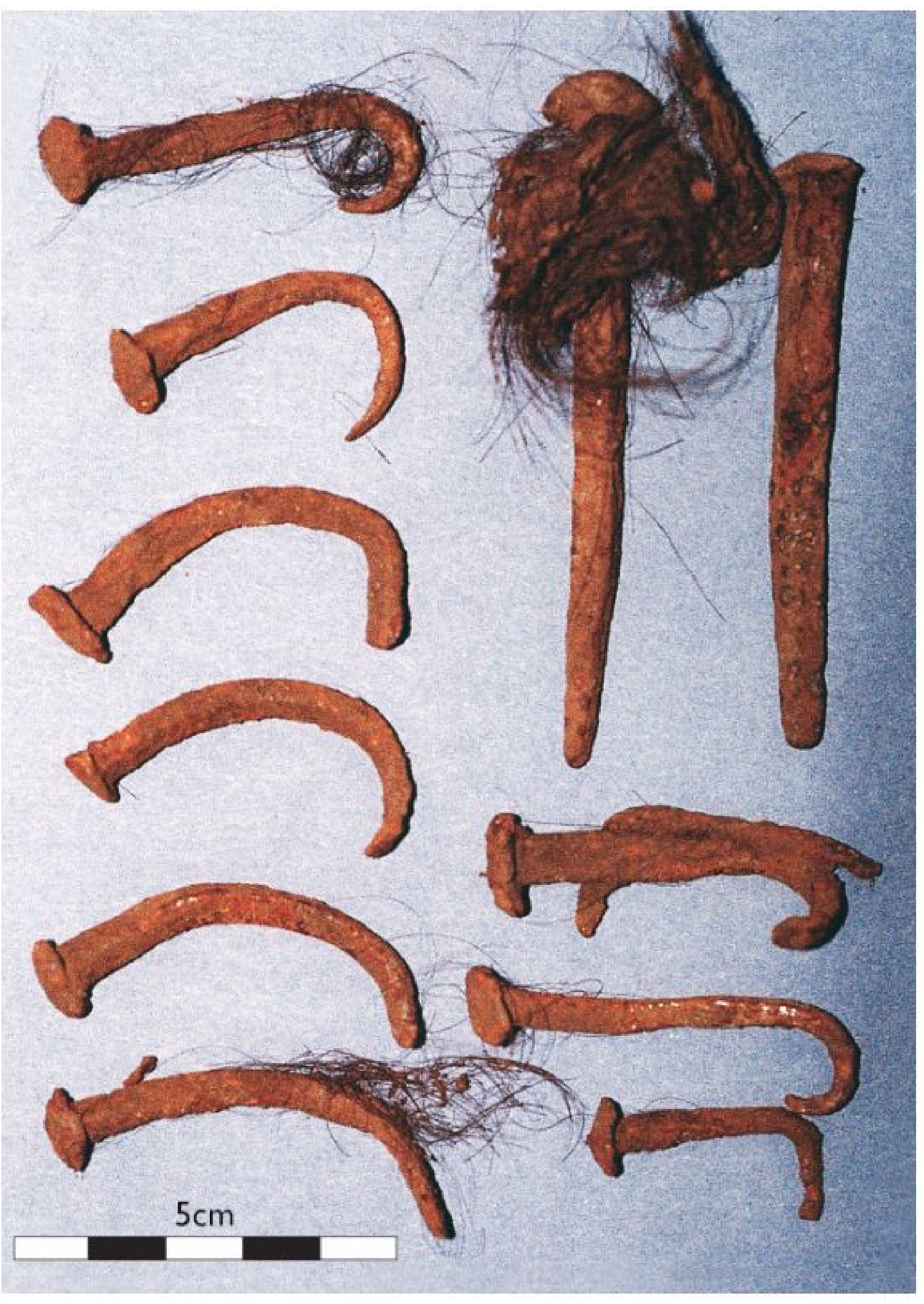
THE VOICE OF ARCHAEOLOGY IN BRITAIN AND BEYOND
Dig: Ritual, death and grapes in neolithic Dorset
Dig: The real story of how Lindow Man was dug up
Dig: Timber halls and painted poles in Scotland
THIS BOTTLE HELD WHAT IS PROBABLY THE MOST BIZARRE STORY EVER TOLD TO BRITISH ARCHAEOLOGY
SEE INSIDE
OR CONTENTS

ALAN MASSEY/OLD ROYAL NAVAL COLLEGE (2)

Above and right: A Dutch or German jug found in 2004 at the Old Royal Naval College, Greenwich; sealed with a cork, it held fingernail parings, hair, pins and iron nails in a liquid identified as human urine

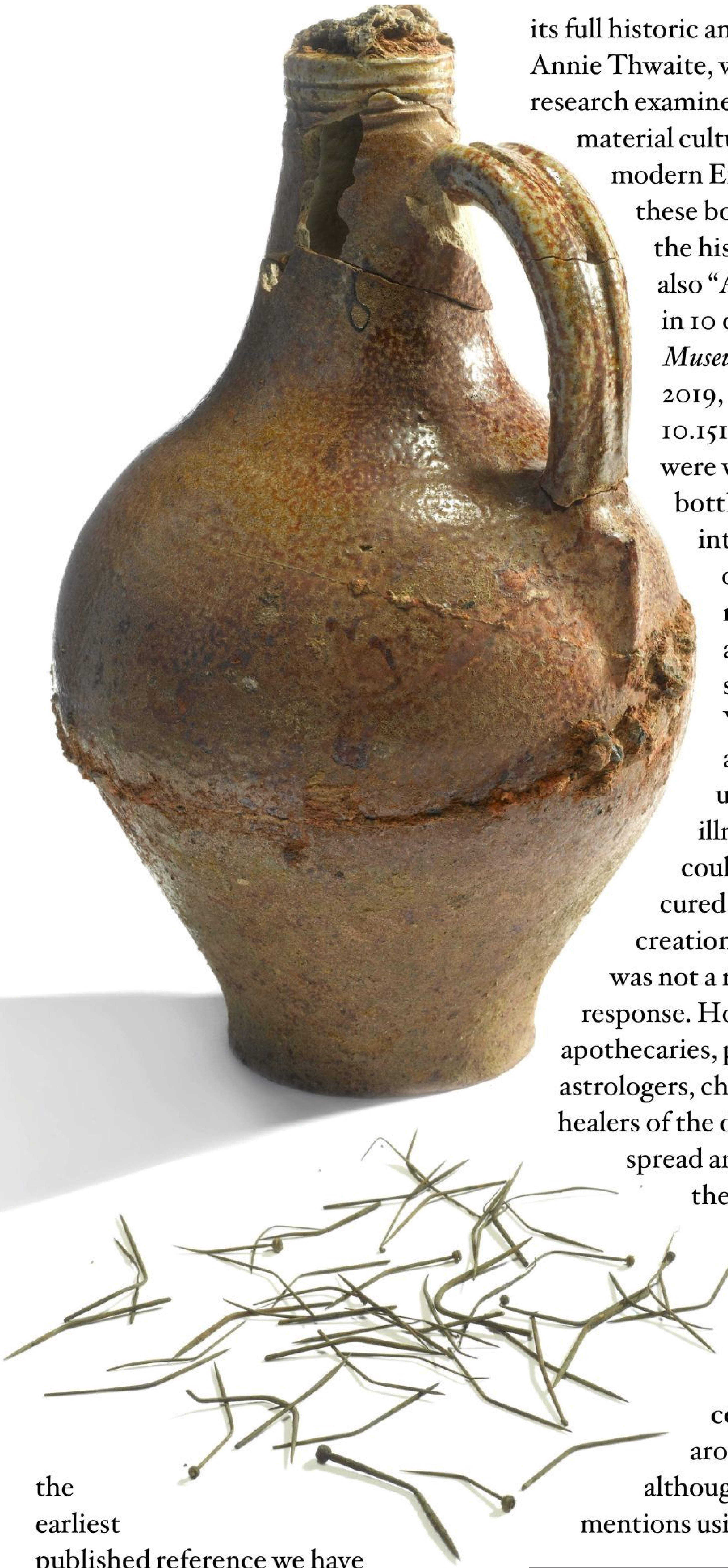
"Witch bottles" is a name applied to deliberately concealed 17th-century glass and stoneware vessels believed to have served for ritual protection or as containers of a "prepared cure" against bewitchment. As evidenced by the Greenwich bottle featured in *British Archaeology* (News Jul/Aug 2009/107), the cure was often a curious cocktail of ingredients: these were commonly pins and nails, but sometimes included (for example) hair, nail clippings and cloth hearts. Urine was also a key component, though this rarely survives centuries of concealment. The bottles have been found in a range of contexts, from hearths and beneath thresholds and the floors of buildings of the period, to churchyards, ditches and riverbanks, and have been rediscovered during later renovations or unearthed from archaeological sites.

Our research represents the most comprehensive synthesis relating to 17th-century witch bottles to date, building on the foundational work by Ralph Merrifield, archaeologist and Museum of London curator, in the 1950s to 1980s, and recently added to by Brian Hoggard (*Magical House Protection: The Archaeology of Counter-Witchcraft*, 2019). The project will examine the bottles, their contents and their concealment, and the appropriate historical context of the practice.



First all the known examples that survive in museums and other collections around London, southern and eastern England – the geographical centre of this curiously English phenomenon – are to be surveyed first hand or through literature review, and critiqued along with their contents. In building a national collection, the project has collated data on over 120 German or London stoneware bottles, with a few glass examples, that have been reported as witch bottles over the past 150 years or so. Early observations suggest most bottles post-date the Restoration of Charles II in 1660, and that the practice might have been relatively short-lived for 30 to 40 years. While some vessels are curated and published, other reported bottles do not appear to have found their way into a museum collection and have been retained by their finders.

By examining the 17th-century origins of this long-lived practice, the project will help determine how this first form of "bottle magic" was then adapted and spread across Britain in subsequent centuries. "Witch bottle" does not appear to be a term used in the early modern period, and



Left: A London stoneware jar, c 1670–1710, excavated in 2008 at Holywell Priory near Bishopsgate during the East London Line project; it was buried in a large hole under the floor of an 18th-century house in a basement or latrine doorway, holding 60 bent copper-alloy pins, rusty nails and a piece of wood or bone

MOLA [2]

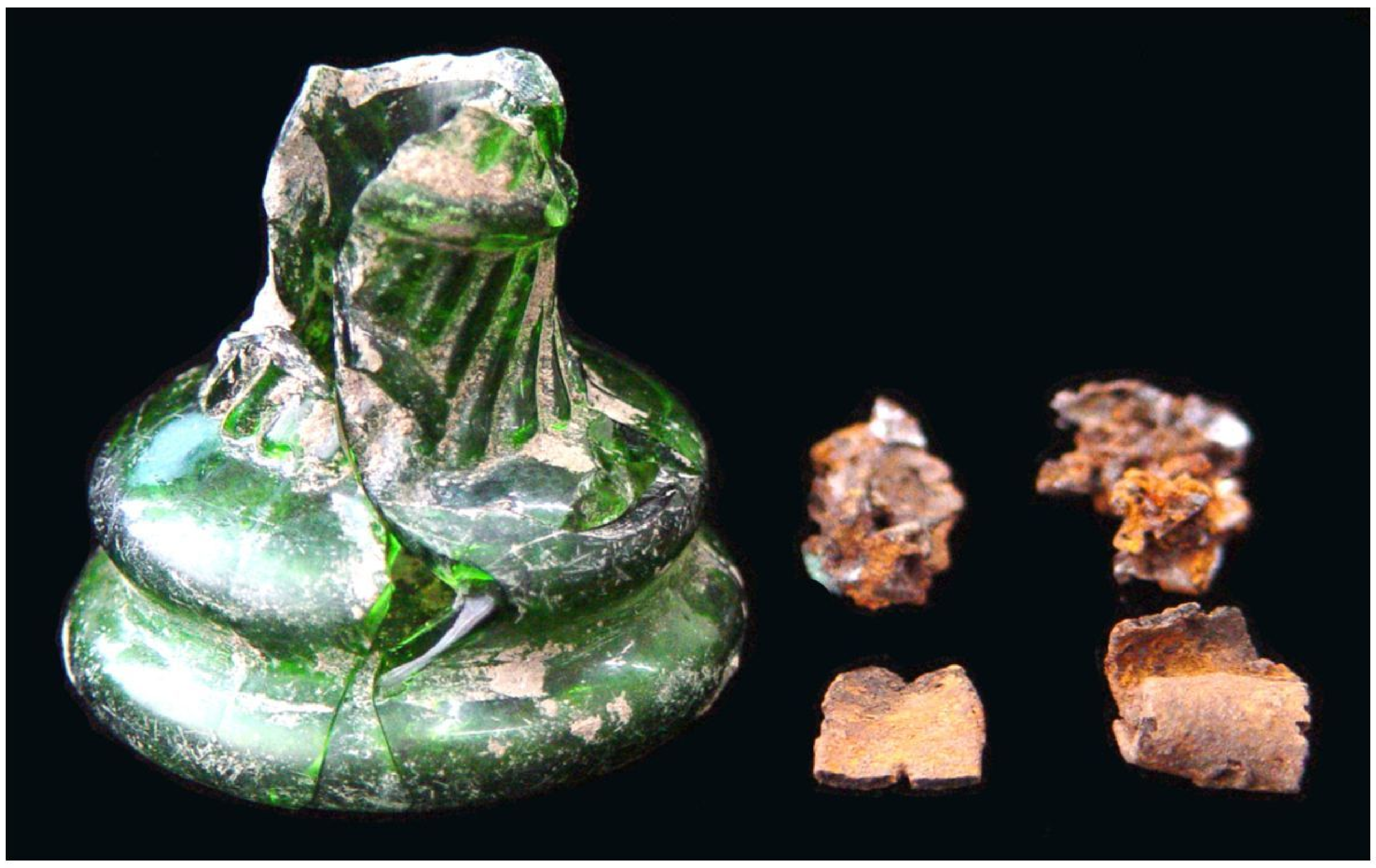
the earliest published reference we have so far found is 1844. The subsequent acceptance of this parlance was influenced by the way these objects were first encountered in Victorian times, and how sympathetic and bottle magic were then understood. "Witch bottles" of all periods have therefore become tarred with the same brush; they are thought of as folkish, as "protective" or as "charms against witchcraft" (Merrifield, *The Archaeology of Ritual & Magic*, 1987), and this has deeply influenced how they are recorded and described today.

Another important enquiry is therefore to situate the practice within its full historic and cultural context. Annie Thwaite, whose doctoral research examines magic and the material culture of healing in early modern England, has called for these bottles to be viewed in the history of healing (see also "A history of amulets in 10 objects," *Science Museum Group Journal* 11, 2019, http://dx.doi.org/10.15180/191103/001). So were witch bottles healing bottles, part of a broader interconnected world of early modern medicine, religion and popular and sympathetic magic? Was bewitchment as a specific disease an unusual diagnosis for illnesses? And if so, how could an individual be cured and protected? The creation of these bottles was not a random individual response. How cunning folk, apothecaries, physicians, astrologers, chemists and the healers of the day administered, spread and communicated the practice needs to be better emphasised.

There are references to the creation and use of the bottles by contemporary writers around 1670 to 1705 – although none specifically mentions using stoneware. But these texts have been uncritically read to reinforce the idea that the objects were used to counter witchcraft, with the apotropaic and prophylactic use of the bottles frequently emphasised. The idea they were linked to the magical protection of the "house" is an area the project will therefore also be examining. These ceramic and glass containers have been found deliberately concealed not only in "houses" or "domestic" contexts, but also in a variety of rural and urban buildings, in addition to open ground, watercourses, ditches and so on.

While witch bottles have no continental European counterpart, their placement may follow broader northern European traditions. This is an area that Ralph Merrifield drew attention to, but has not been reviewed since. We hope that the publications, catalogue and datasets which the project will generate, and the insights revealed, will benefit not just specialist historians and archaeologists but also engage and inform museum and folklore curators, and those outside academia for whom the subjects of healing and witchcraft resonate.

Do you know of any witch bottles of the period the project is studying? We are interested in hearing from readers of British Archaeology *who might know of examples stored in a museum archive, on display or in private collections. Please email witchbottles@mola.org.uk. For help if you find a suspected witch bottle, visit https://www.mola.org.uk/blog/what-should-you-do-if-you-find-17th-century-witch-bottle* ■



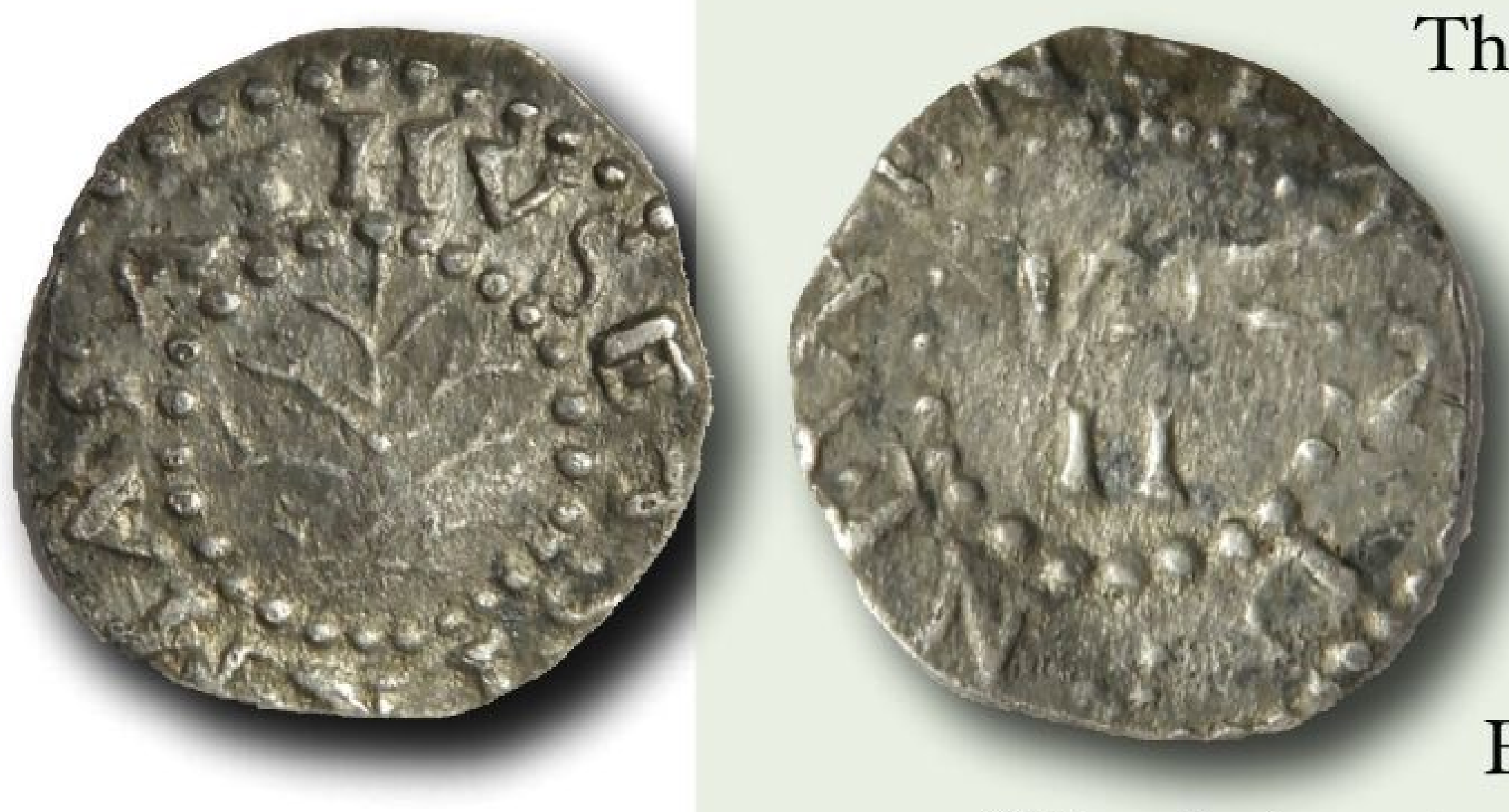
Left: 19th-century glass, possibly a candlestick base, found during building work in Lincolnshire and holding corroded iron and copper-alloy objects (possibly pins and dress hooks) and a leather strap (bottle base 5cm across); the oldest use of the term "witch bottle" the project has found is 1844, when the practice may have changed from its 17th-century origins

PORTABLE ANTIQUITIES SCHEME

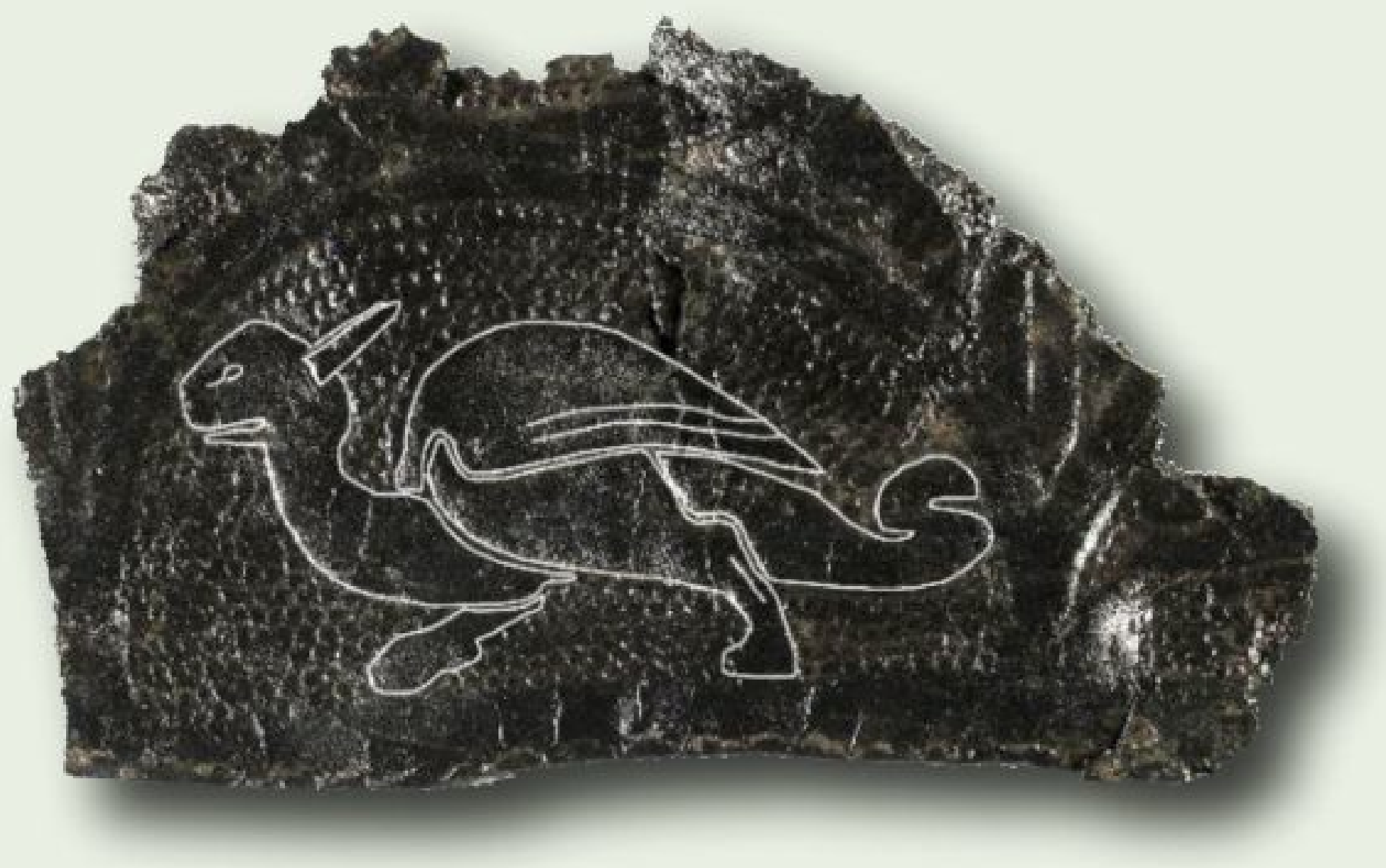
Britain in archaeology

Marking the 75th anniversary of D-Day on 6 June, the Department for Digital, Culture, Media & Sport, advised by Historic England, gave **statutory protection to Second World War remains**. They include concrete structures, tanks, bulldozers and elements of Mulberry floating harbours, all of which took part in preparations for the allied assault on Nazi-occupied France.

Concrete replica landing craft, such as that at Braunton Burrows, Devon, now listed grade 2 (photo left), were used to train troops in embarking and disembarking vehicles and personnel. An annual memorial service is now held at the site, but many such structures were demolished late in the last century. Tanks and bulldozers off Selsey Bill, West Sussex (now a scheduled monument, photo above right) were lost when a landing craft broke down en route to Normandy; the vessel capsized under tow, spilling its cargo into the sea, and was later deliberately sunk by gunfire. Further vehicles were lost during an exercise off Studland Beach, Dorset, when amphibious Valentine tanks sank (now scheduled, right) with the loss of six crew.



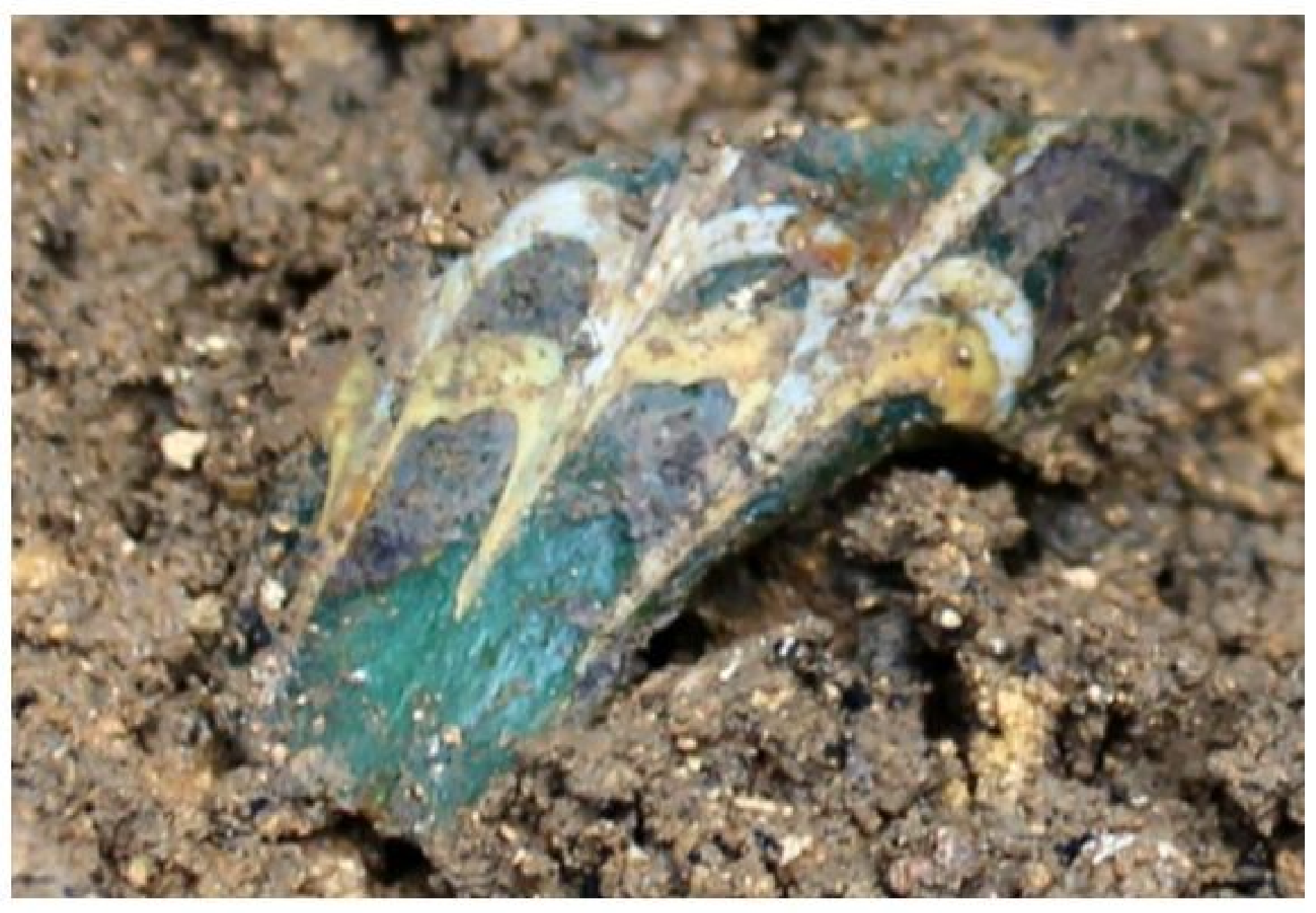
This **silver twopenny coin**, dated 1652, was found by a detectorist in the South Hams of Devon. It was not issued in 1652, however, nor minted in England. It was originally from the Massachusetts Bay Colony, an English settlement on the east coast of North America. It probably dates from the 1660s or 70s, when the colony understood it had no rights to mint coinage and backdated its issues. It is the sixth such coin to be recorded by the Portable Antiquities Scheme, and the first from south-west of England, all presumed to have been brought home by sailors and merchants.



A scrap of medieval leather decorated with a **dragon-like mythical beast** has been found in York, where the York Archaeological Trust has been monitoring work by Northern Powergrid to replace high voltage cables. Toby Kendall, project officer at YAT, said that the leather fragment (13.5cm across) had probably originally been disturbed from deeper waterlogged deposits when sewers were installed over a century ago. "The recovery of the artefact shows the value of observing the works underway," he added, praising the contractors for their co-operation, "even though they have not directly disturbed the waterlogged archaeology lower down."

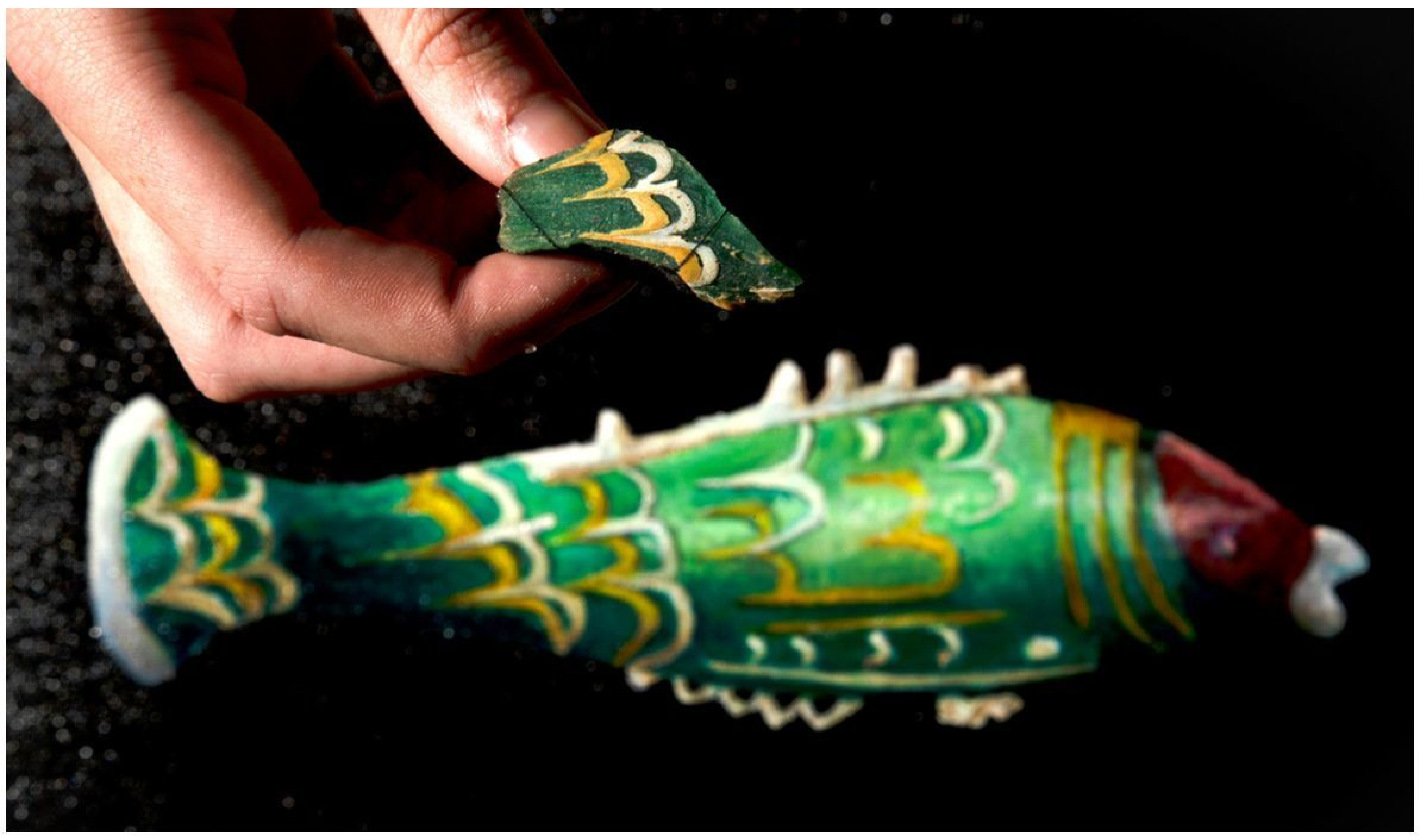
In 1919 Admiral Ludwig von Reuter ordered the scuttling of Germany's surface fleet, interned in **Scapa Flow**, Shetland after the end of the First World War. Most of the 52 vessels that sunk have since been raised to the surface or stripped of their more valuable parts. In 2001 the seven surviving wrecks were scheduled as ancient monuments. Fittings said to have been removed before scheduling still change hands, but in July four entire ships were listed on eBay ("pre-owned") for £810,000. They were said to have been bought, for a tenth of the price, by a Middle Eastern company and a "gentleman from the south of England". The law allows the new owners to dive and look.

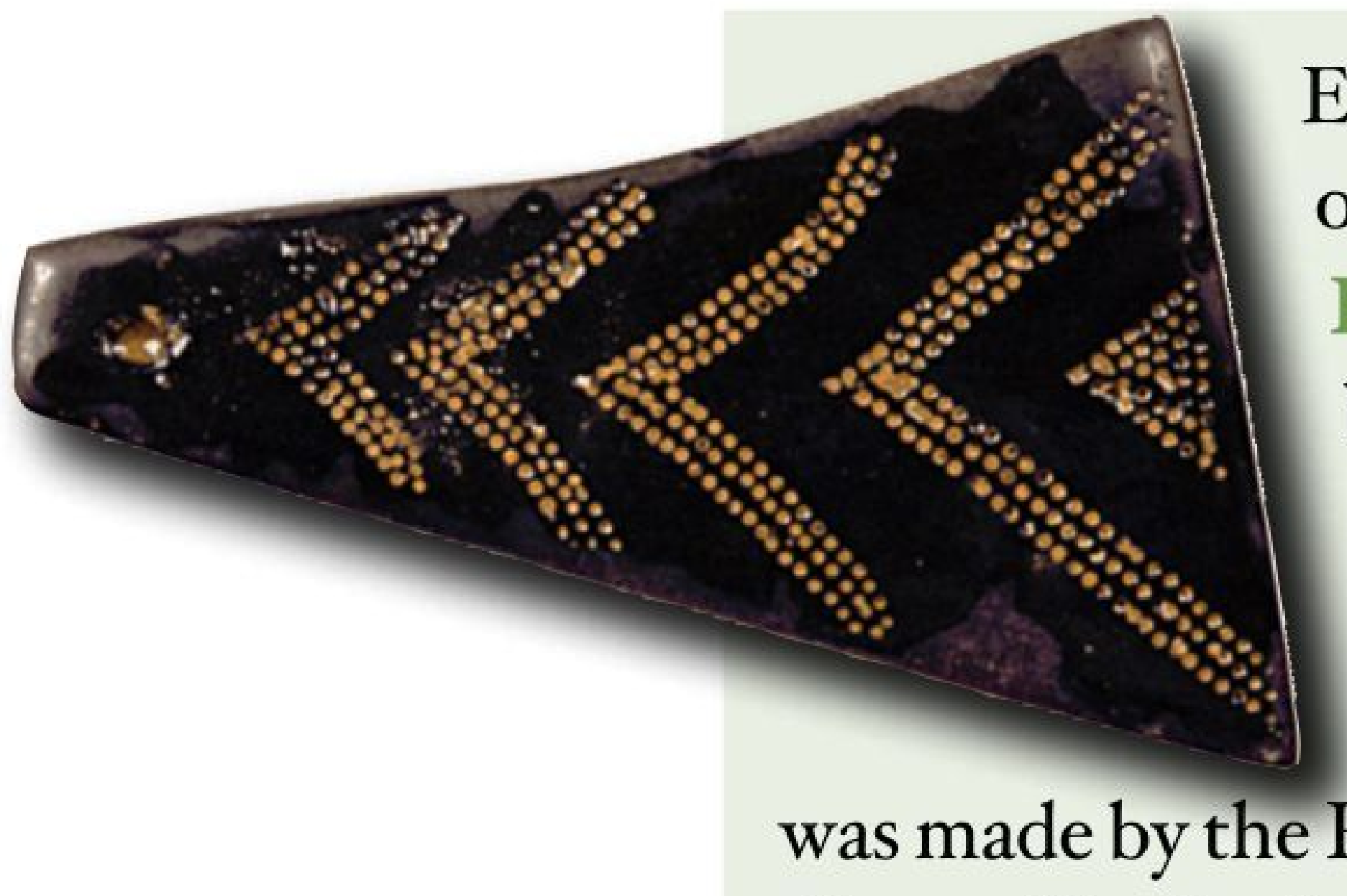
A **Roman wooden arm** has been found at Warth Park, Raunds, Northamptonshire, where Oxford Archaeology East excavated ahead of the construction of an industrial estate in 2013–14. Of small adult or adolescent size, the arm appears to have been thrown into a well, said archaeologists, as a votive offering; the absence of jointing at the shoulder suggests it was not part of a larger sculpture. It has been radiocarbon dated to AD85–240.



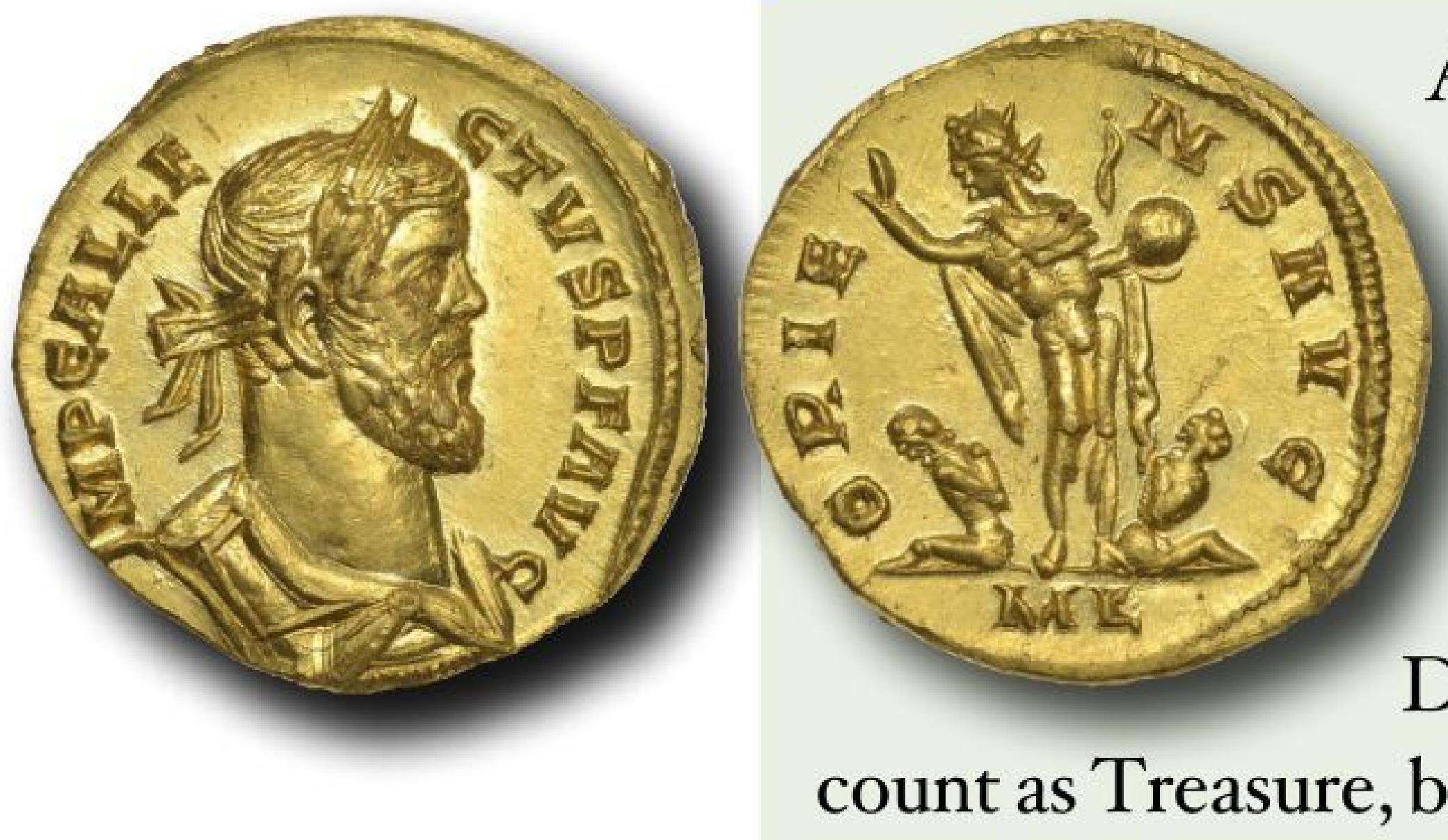
A fragment from a **fish-shaped glass bottle** has been found at Chedworth Roman villa in Gloucestershire, unique in Britain and representing one of only four such bottles recognised from the entire Roman empire. It was excavated by the National Trust in 2017, and identified by the late Jenny Price. "Other objects found at the villa show it was home to somebody of wealth and status," said Nancy Grace, a National Trust archaeologist.

Price matched the glass flake to a nearly complete fish, with less vibrant colour surviving, in the Corning Museum of Glass in New York. This and another flake in the museum have no provenance, but a fourth fish does, found in fragments in a grave at Chersonesus on the Black Sea in the Crimea in 1903. Remains at Chedworth were first discovered in 1864. New excavations have been taking place since 2012, aimed at improving the site for visitors and gaining a better understanding of the once grandiose villa's history and setting; the photo shows a mosaic being uncovered in 2014.





Excavation near Kirk Michael on the Isle of Man has uncovered a stunning **Early Bronze Age necklace**. Its 122 decorated beads were shaped to fit a crescent arrangement of multiple strings, and are thought to have been made with Whitby jet from North Yorkshire. The discovery was made by the Round Mounds of the Isle of Man project, directed by Rachel Crellin of the University of Leicester and Chris Fowler of Newcastle University. Seven cremation burials had been previously excavated on the site, but the beads were in the first identified inhumation.



A Roman gold coin featuring Allectus, emperor from AD293 to 296, **sold for £552,000** in June, five times the upper estimate. The *aureus*, said to be one of 24 of its kind known, was found by metal detectorists near Dover. Single gold coins do not legally count as Treasure, but if proposed revisions to the Treasure Act are implemented, museums would have the chance to buy such a coin at an independently assessed market price.

Police seized a large number of **coins and a silver ingot** from properties in Co Durham and Lancashire in May, all believed to have come from a Viking hoard. The find, said Gareth Williams, curator of early medieval coins & Viking collections at the British Museum, is "nationally important". The coins suggest an undocumented alliance between Alfred the Great of Wessex and Ceolwulf II of Mercia, said Williams, adding significantly to our understanding of early medieval England's political history. "We are in the very early stages of what is going to be a very long and complex investigation," said DI Lee Gosling, senior investigating officer at Durham Constabulary.

A musket ball and large fragments of a coehorn mortar shell, debris from the **Battle of Glenshiel** (1719), have been found at the battlefield in the West Scottish Highlands where a government victory ended the Jacobite Rebellion. A team led by the National Trust for Scotland is surveying the protected site with metal detectors. Four coehorns, small lightweight mortars, are known to have fired at the Jacobite right wing on the knoll south of the River Shiel.

Archaeologists say large Iron Age and Roman settlements in Newington, near Sittingbourne, could be **the site of Durolevum**, a "long-lost Roman town" named in the second-century Antonine Itinerary. Paul Wilkinson, director of the Kent Archaeological Field School, said exceptional preservation gave the site "national importance". Extensive excavations by Swale & Thames Archaeological Survey occurred ahead of the construction of new housing. Finds included a pre-Roman gold coin of Dubnovellaunus, a Romano-Celtic temple, iron furnaces and pottery kilns. ■

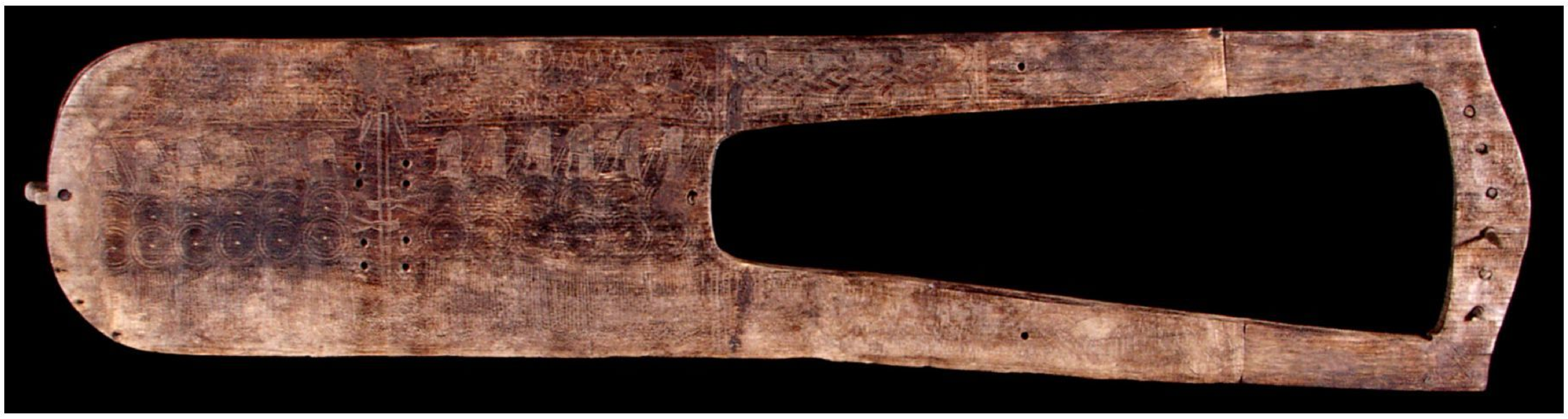
letters

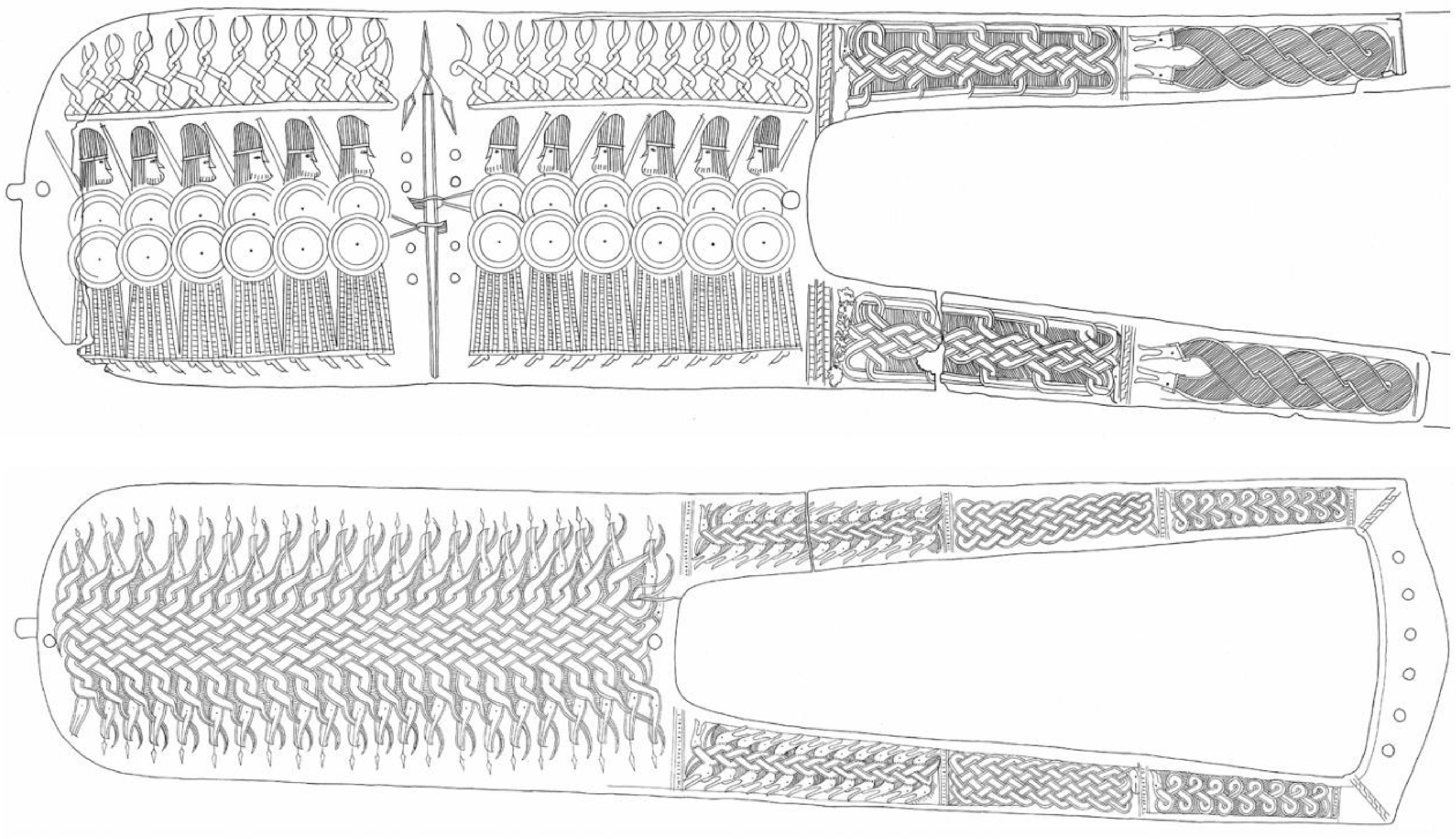
Inspired by Prittlewell

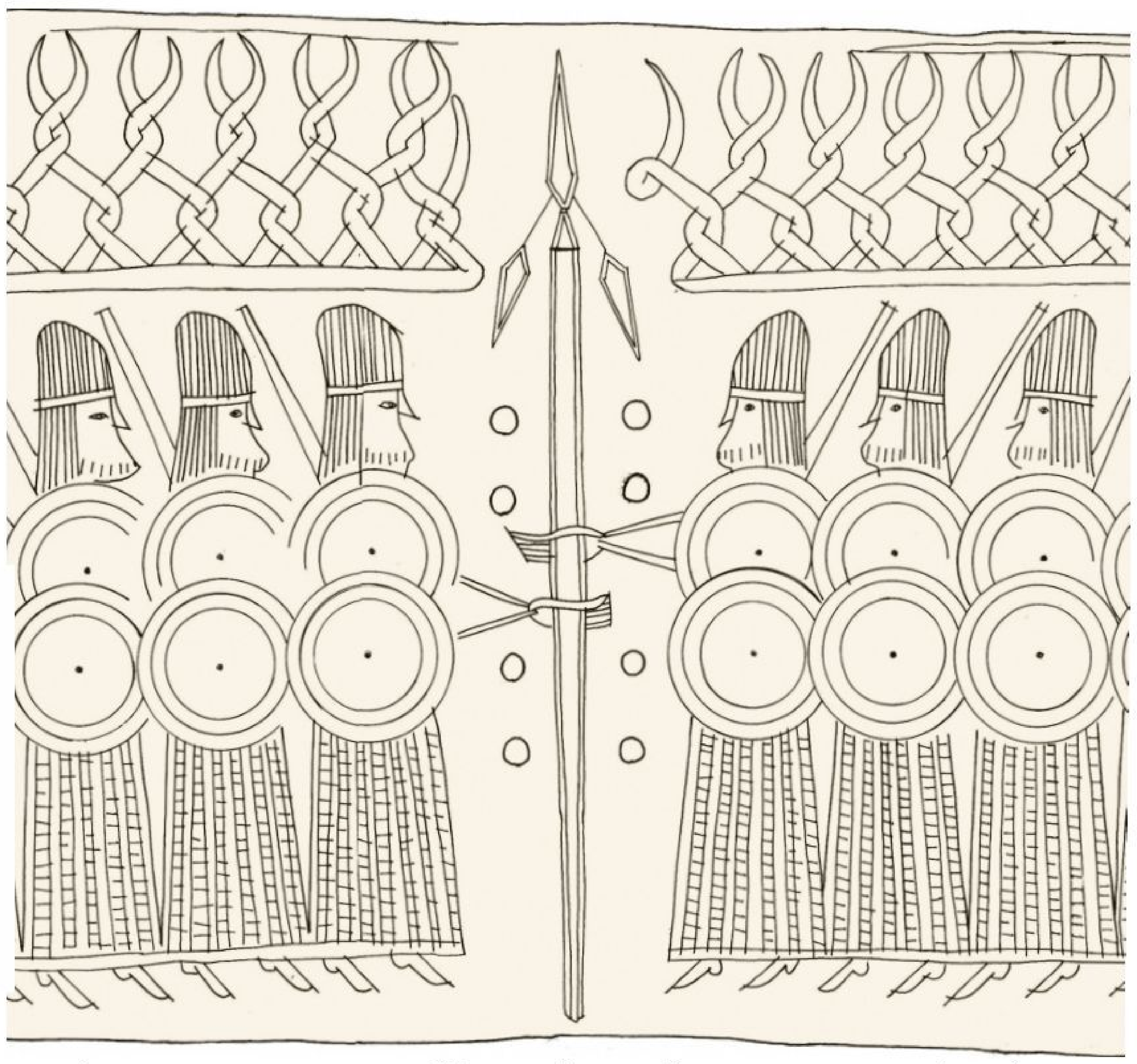
I read your archaeology magazine with great interest. I would like to add something to your Prittlewell prince report (feature Jul/Aug 2019/168). The evidence with the lyre reminded me of the lyre grave of Trossingen in southern Germany.

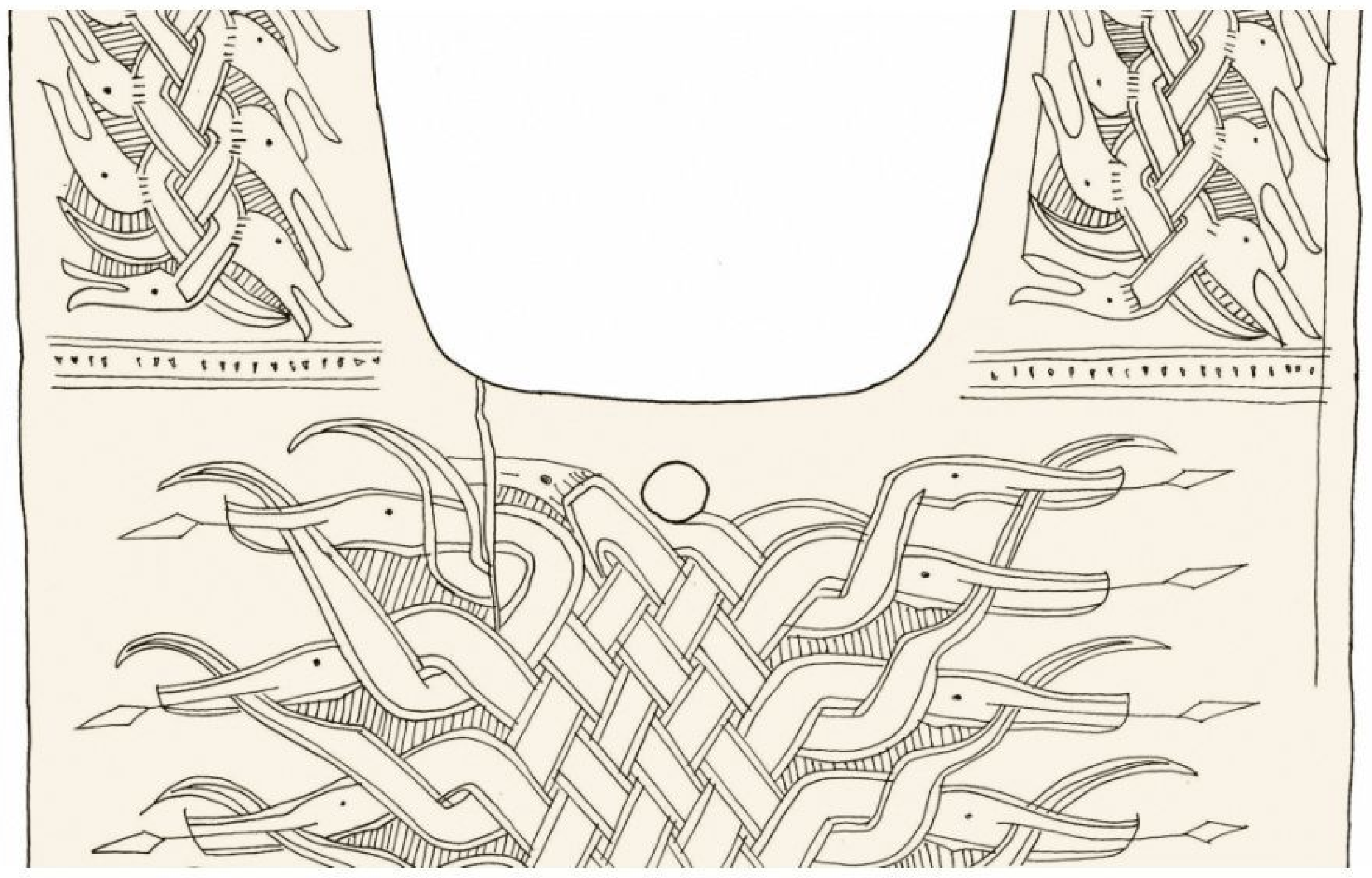
In 2001/02 archaeologists investigated the extraordinary grave of a Merovingian nobleman (grave 58, around 580CE) containing well-preserved wooden furniture, textiles, weapons, etc as well as a lyre. This lyre is decorated both on the front and on the back (see illustrations). Comparative scientific investigations and essays examined the combination of grave chamber, inventory, weapons, lyre and male burial. The phenomenon may be interpreted in a spatially wider context of the early medieval world.
Katharina Grötz, Mainz, Germany

• *My thanks to the writer for arranging illustration permissions. Ed*









Above: A wooden lyre miraculously preserved in a grave in southern Germany, c AD580

PHOTO © ARCHÄOLOGISCHES LANDESMUSEUM BADEN-WÜRTTEMBERG/MANUELA SCHREINER, DRAWINGS © LANDESAMT FÜR DENKMALPFLEGE IM REGIERUNGSPRÄSIDIUM STUTTGART/E BELZ & A LIER/AMT FÜR ARCHÄOLOGIE

It is a great pleasure to see that, 15 years after its discovery, the burial of the "Prittlewell Prince" has now received handsome publication. Since the initial discovery of furnished Anglo-Saxon burials during roadworks in 1923 and 1930, it has been obvious that there was something very special about this site, the finds being uncharacteristic of Essex. Although the county lies between East Anglia and Kent, it lacks the profusion of early/mid-Saxon cemeteries that its neighbours boast.

Consequently, the exquisite jewellery from a female grave, displayed in Prittlewell Priory Museum, attracted my attention around 1960: it was Kentish in style, and there was nothing comparable from Essex. Living nearby, I had to cycle past the burial site every day on my way to the local grammar school, and for several years I gazed at the finds and pondered the Anglo-Saxon conundrum, as I catalogued and drew Roman pottery in the museum at weekends.

The Prittlewell prince returns home

Fifteen years ago we featured a routine excavation in Essex that produced an extraordinary discovery – the grave of a wealthy Anglo-Saxon man. Investigative conservation and intensive scientific analysis of its contents are now complete. Sue Hirst and Liz Barham report

During the summer vacations, the museum ran excavations in the area, and boys from the grammar schools were invited to take part: Paul Drury (currently president of the Society of Antiquaries) and I volunteered, and in the early 1960s I attempted to persuade Donald McLeod, the museum archaeologist, that we should revisit the Prittlewell burial site, but he thought it had been too heavily disturbed by the 1920s roadworks to be worthwhile. Predictably, I was unconvinced, but who would heed a precocious schoolboy anyway? Of course, no excavation in the early 60s could have recovered a fraction of the scientific data that we now have from the site.

I am not sorry that I have had to wait 55 years to satisfy my youthful curiosity. It is both intriguing and gratifying that one's premonitory thoughts can unexpectedly turn into reality many years later; it has happened quite a few times in my archaeological career.
Warwick Rodwell, Westminster

Write to the editor at email or postal address on page 3. Letters may be shortened

Skinny digging

Looking at the hypocaust discovered at Binchester (advert Jul/Aug 2019/167), reminded me of the time we discovered the hypocaust at Dewlish, Dorset, in 1969! Bill Putnam needed a thin student to crawl beneath the floor along the tunnels, and clear some of the debris. Guess who was chosen: I was the only one of his students going on to degree level (the rest wanted to get jobs as soon as possible) and I was very skinny. There was quite a considerable amount of the hypocaust intact, including the stoke hole.
Anne Audrey Russell, Southampton

A Dorset midden

I remember hearing of the then newly discovered middens at Potterne and East Chisenbury (end of the Bronze Age feature, Jul/Aug 2019/167) when Andrew Lawson was investigating these in the mid 1980s, as featured in his comprehensive survey of Wessex archaeology (*Chalkland: An Archaeology of Stonehenge & its Region*, 2007).

The characteristics of these complex sites seemed familiar and, in the *Proceedings of the Dorset Natural History & Archaeological Society* 93 (1971) I found reference to a site west of Chalbury hillfort, which appears somewhat similar to those further east in Purbeck. This site extended along a north-south aligned spur parallel to the hillfort and overlooking Weymouth Bay. Visible in a pipe trench along the ridge was "an unusual depth of black soil" at least one metre thick and extending for at least 200m. From the illustrations, this was complex in structure and long lived, with finds ranging through the Iron Age but including some Roman material in the upper levels and surfaces of stone and shale slabs, interleaved between the layers of soil and ash. Shale bracelet rough-outs also suggested imports from further east in Purbeck and recall similar finds from Nacqueville on the Cherbourg Peninsular, demonstrating the long distance trade in such unfinished objects.
Christopher Sparey-Green, London

Amateurs care

I read the feature on Reading Gaol with interest (Jul/Aug 2019/167).
I am glad that you are finding the government is apparently suppressing information, for perhaps that will help you understand that sometimes things are not as they should be. Amateurs are rarely "experts" although we do "know" a good many truths! We are up against developers and some government officials as they try to cover things up! Much is lost for ever and who seems to care?

Thanks so much for Mike Heyworth's Correspondent. I must have missed the Publication User Needs Survey (Jul/Aug 2019/167). OASIS (Online Access to the Index of Archaeological Investigations) may prove to be the way forward to collate the findings of us "amateurs", finds that I believe are invaluable in understanding the whole of our country's archaeology.
Lesley Feakes, Lenham

Dogs in charge

I'm a volunteer for the CBA's planning casework, and a lifelong history and archaeology enthusiast. On seeing the excellent new *British Archaeology*, I was overjoyed to read about the relationship between dogs and humans, especially the idea that this goes back to the Palaeolithic (News Jul/Aug 2019/167). I've long thought that this ancient partnership has been seriously overlooked. Until now, dog remains in burials have seemingly been largely ignored, or attributed to modern concepts of "pet ownership".

My own view is that, around the end of the last Ice Age or before, when humans and animals were on the move finding new territories, a social group who had a team of dogs would have terrific advantages over any neighbours who did not, perhaps securing their very survival chances. Dogs would clear up food waste, guard against vermin/predators/enemies, help to keep everyone warm, and protect women and children when the chaps were off hunting. The dog is probably the prime mammal which studies the human face, understands some speech, senses illness, finds comfort in "cuddles", licks wounds clean and unquestioningly supports its "owner".

Below: Face of a dog based on a skull from a Neolithic burial cairn at Cuween Hill, Orkney, around 2500BC

HISTORIC ENVIRONMENT SCOTLAND

Perhaps the most important factor was the hunt. Men with dogs would have access to speed, distance, acute hearing, stamina, stealth, protection, fearlessness and transportation. Spare kit, bigger kills and injured hunters could be dragged home on sleds.

I think the dogs were in charge! They just needed the opportunity to join families as they started to settle in a territory, and share the spoils in return for shelter.

Did dogs accompany people on journeys to funerals, festivals and clan-gatherings? Would dogs have been traded in a similar way that people found new partners and traded skills, equipment and artefacts? In Victorian England dogs were sold at hiring and horse fairs for herding, racing, ratting and hunting, and performing dogs accompanied travelling entertainers. More controversially, did dogs throughout history help humans to socialise with each other just as they do today, as fellow dog-walkers get to know others, admire their dogs and enjoy the harmony which most dogs bring (and help overcome loneliness)?
Deborah Klein, Leominster

Clarification

I understand that some people were concerned about the cartoon that appeared with the Spoilheap column in the last edition (Jul/Aug 2019/167). Frank Somers, of Amesbury Stonehenge Druids, wrote to the CBA to say that he had heard about the cartoon, and that the depiction of a Druid beheaded by Roman soldiers at Stonehenge was "repugnant and offensive… [and] well-intentioned but in very poor taste". I am happy to put on record that, in Somers' words, the "cartoon in no way indicates that violence against Druids is acceptable or that Druids are the main opposition to the A303 tunnel". Ed

18+

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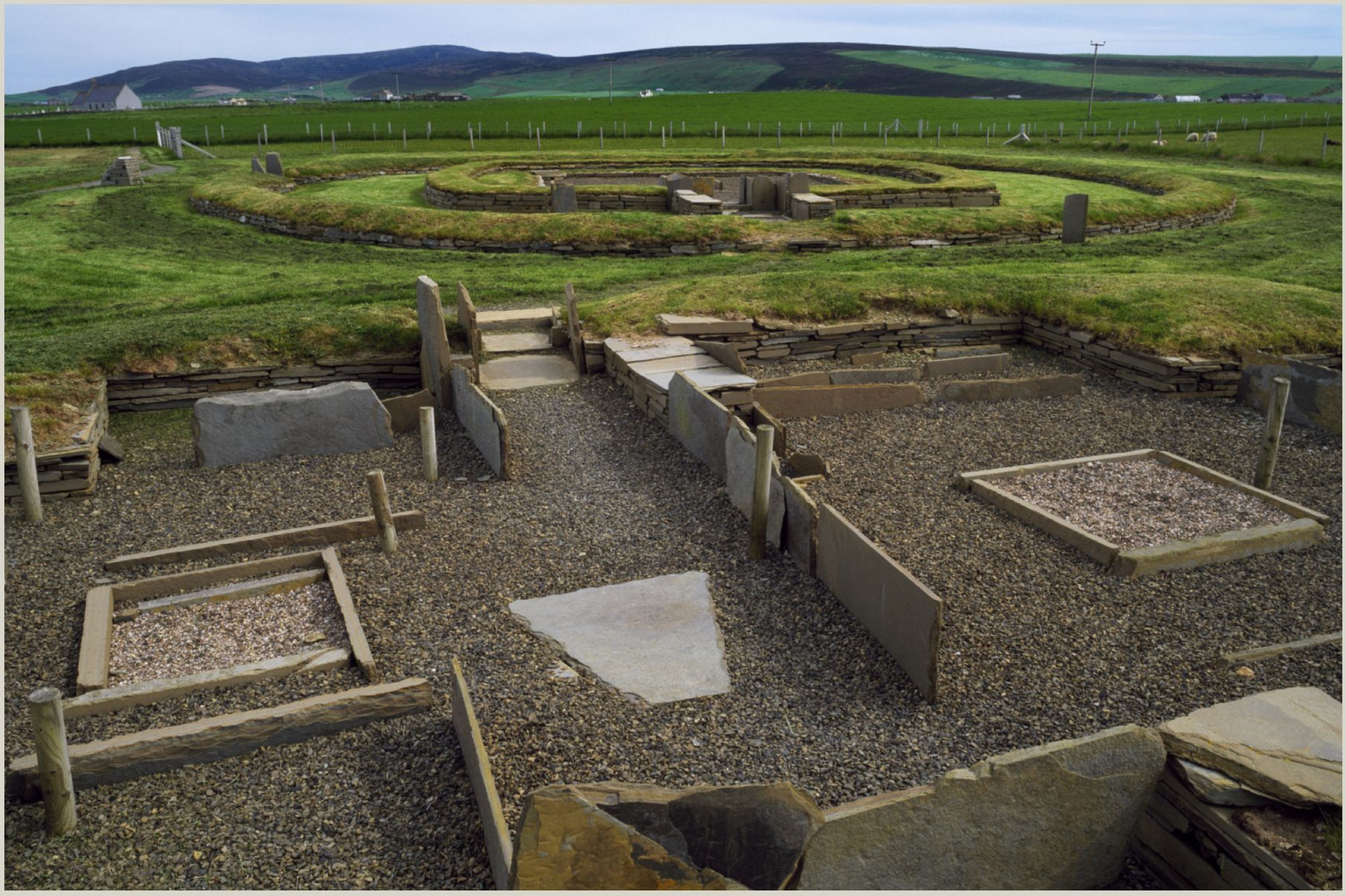
Mick Sharp reflects on the many attractions of Orkney, now and in antiquity

Watching the sun in Stenness



MICK SHARP

The Standing Stones of Stenness (Historic Scotland) are about 5 miles north-east of Stromness on the B9055. Barnhouse Settlement (Orkney Islands Council, HY 306127, KW16 3JZ) is just to the north beside Loch Harray

The Orkney archipelago – some 90 islands and skerries (rocky outcrops and sea stacks) – provides a paradise for archaeologists, historians, geologists, naturalists, writers, poets, artists and musicians, and lovers of varied coastal scenery, good food and drink. The islands are part of the Scottish mainland, almost drowned by rising sea levels during the Final Upper Palaeolithic (around 11,000BC). Remorseless seas are further reducing Orkney's margins, revealing remarkable ancient sites in dunes and exposed land faces. In the Neolithic, kinder sea conditions than today allowed island-hopping people to cross the Pentland Firth from Caithness. Fertile land for mixed farming, manageable woodland, easily split building blocks and flagstones of Old Red Sandstone, spare time and abundant human resources enabled the building of exquisite stone structures – houses, chambered tombs, temples and circles – on a grand scale.

In western Mainland, within the Heart of Neolithic Orkney World Heritage Site, stand the great stone circles of Ring of Brodgar and Stones of Stenness. Along with associated tombs and outlying menhirs, they form a breathtaking ceremonial complex now set in a theatre of water and sky. Linking them, running between the lochs of Stenness and Harray, is an isthmus called the Ness of Brodgar. Excavations there by Nick Card have, since 2003, revealed a complex of Neolithic (around 3200BC–2300BC) drystone structures – a massive boundary wall, long houses with ground plans similar to stalled cairns, and a large temple-like building – combining "domestic" and "religious" characteristics (see most recent feature Sep/Oct 2018/162).

In 1984–91 Colin Richards uncovered a similar mix at Barnhouse just north of the Stenness circle, by fieldwalking and excavations. Some of the circular, free-standing "family" houses, and two elaborate "ceremonial" buildings, have been partially reconstructed. The feasting and meeting-house (House 2, foreground above) was used throughout the life of the settlement (3300–2600BC). Its interior resembles a Maes Howe-type tomb with six recesses leading off a central area. The doorway was aligned south-east to midwinter sunrise, such that a beam of light would fall on the covering slab of a cist between the two fireplaces.

During the settlement's final phase a monumental temple (Structure 8, rear) was constructed, with a 3m wide (10ft) cavity wall surrounded by a circular clay-floored courtyard. The inner covered space was over 7m (23ft) square, with a central hearth and a stone dresser. The entrance faced north-west towards the summer solstice setting sun. Beyond the threshold, flanked by two standing stones, lay another hearth, possibly used for ritual purification. Cooking for large-scale feasting was carried out in the courtyard, on hearths situated behind the temple's rear wall.

While I was photographing Barnhouse from a pair of steps in June 1997, a familiar *Time Team* figure arrived. I admired Mick Aston's work, we shared an interest in Early Christian sites and he'd made kind comments about my photos in reviews for Oxbow Books, so we soon got chatting. There was the possibility of some of my photographs being used in his planned book on early monasticism in the British Isles: we stayed in touch but, sadly, it was not to be. ■

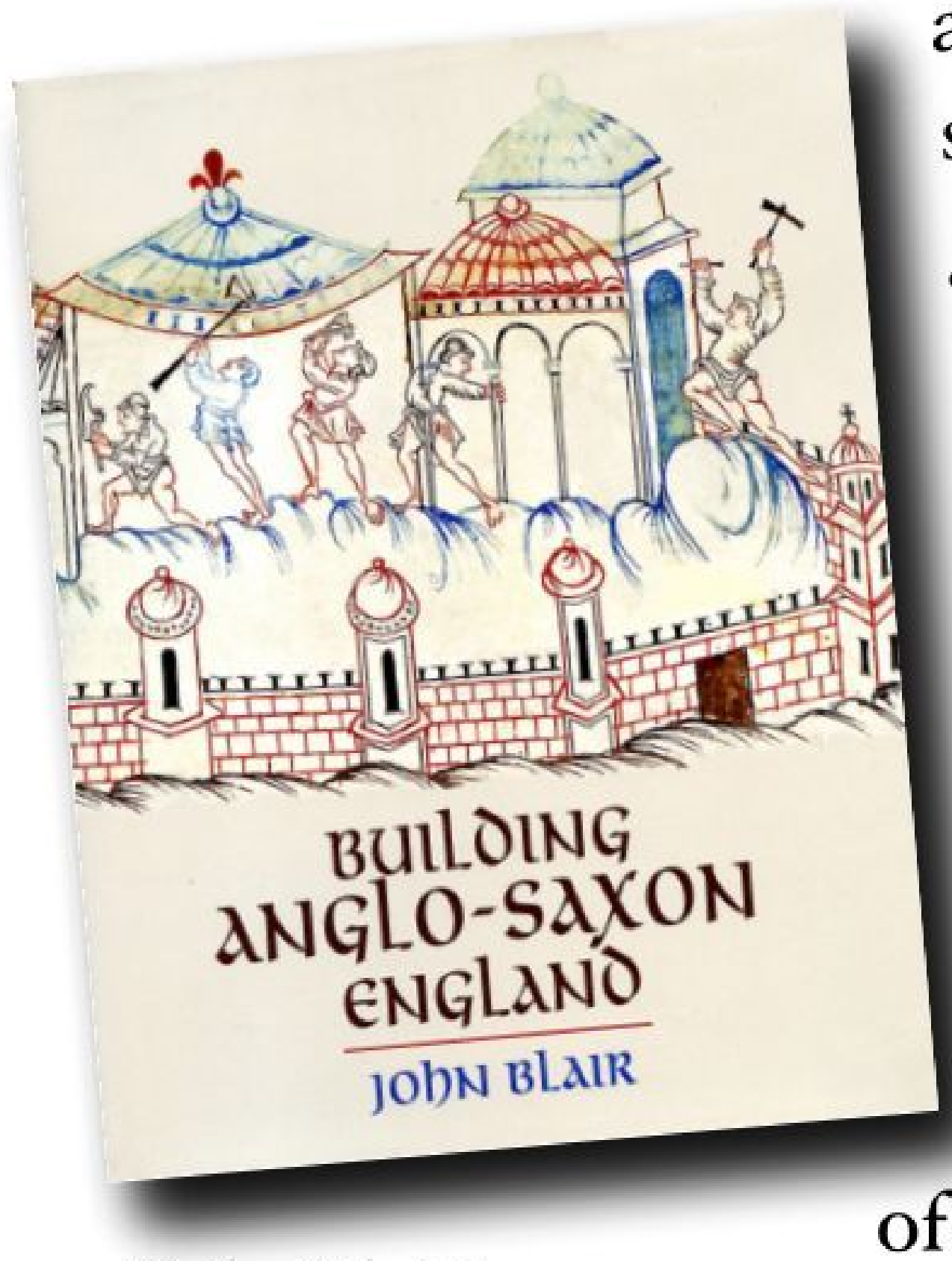
John Blair had a dream job of years of pure research. His survey of "grey literature" – reports on development-funded excavations in local archives – changed the way he thinks about England

Deconstructing Anglo-Saxon England

I got this Leverhulme major research fellowship, which gave me three years completely off with all expenses paid. Without that funding I would have found it impossible to sit down with so many reports – academics just don't have time to do that, the amount of data is enormously greater than used to be the case. The good planning authority archaeologists know what's happening in their own patches. But of course academics don't, because the grey literature is still really very impenetrable. And the planning archaeologists, and to some extent contract digging archaeologists, don't have time to research the wider picture.

In some ways the most enlightening part of the whole thing, was when I took six weeks in the summer doing a grand perambulation of England. My family all went to Finland, where my wife comes from, and so I was on my own. I was able to talk first-hand to archaeologists in every area, and pin them down.

Ten or 20 years ago it was normal in counties to find archaeologists who had been there for several decades, and knew the local evidence. I met quite a lot of those people, but they were often either redundant and gone off into private consultancy, or on the verge of retirement. I think that that terrible attrition of established expertise, as in so many areas of public life and local government, is a serious problem.



John Blair's* Building Anglo-Saxon England *(reviewed in Books Jan/Feb 2019/164) was shortlisted for the Wolfson History Prize 2019

My view of Anglo-Saxon England has changed quite fundamentally. There are areas where there really is not evidence for Anglo-Saxon material culture. For a long time people said that was led by the evaluations: in places like Cambridgeshire there's a great deal of development, and so material comes up. Similarly it was said that detectorists go to the Lincolnshire prairie farms, so that's where they find artefacts.

But actually there's no relationship between high concentrations of Anglo-Saxon settlement and evaluations or detectorists. It all amounts to a very clear picture: there's lots of material in a zone of eastern and central England, where coins are used and where we find remains of substantial timber buildings. And there's all the rest of England, where you get very little evidence.

This applies even to Wessex. One thinks of Wessex as being at the heart of things, but in terms of material culture it looks very peripheral. We have a tremendous distortion from writing Anglo-Saxon history from the point of view of the archives, where documents survive. Wessex comes out on top: we have the Alfred circle, the Anglo Saxon Chronicle, charters and so on. We have no charters at all from eastern England. But it's eastern England in archaeological senses where it's all going on. The archaeology helps us to emancipate ourselves from the deficiencies of the written record, and get a more rounded picture of what Anglo-Saxon England was like. We've underplayed the continuing links of England with the Low Countries and Scandinavia, and correspondingly overplayed the links with Francia.

I think it's something fundamental about documentary cultures. Eastern England was more individualistic, more community based. Things were written down in informal English memoranda that tended not to survive, rather than in formal Latin diplomas which were kept. It raises fundamental questions about the identity of England. To what extent is all of England English? My picture of Anglo-Saxon England is much less coherent and unified than people have tended to see it. Central government was imposed on a variety of regions that were really very different to each other.

My father was a specialist in arms and armour at the V&A. I've never known a time when I didn't want to be a historian or archaeologist of some sort. My first permanent job was the one I still have: I was appointed in 1981 to my fellowship in history at the Queen's College, Oxford. I was pleased they called my titular professorship history & archaeology. For the first time I actually had archaeology officially in my job title.

I enjoy teaching, but I'm fed up with the slowly but surely increasing bureaucratisation of academic life. I'm retiring next year, three years early so I can concentrate on my research. I've got a whole load of things to finish off, and I'm going to pursue an interest in the archaeology of the dangerous undead – the vampires and the killing of the dead for which there's lots of evidence from Anglo-Saxon England.

I find myself very irritated by people today talking about England as having been independent, and regaining sovereignty and so forth. England is an amalgam of areas that have always been connected with their neighbours. If you compare the circulation of Frisian-minted *sceattas* [silver coins from the Netherlands] in the early eighth century with Brexit voters, there's an extraordinary correspondence. The areas where they get so worried about immigrant fruit-pickers and so forth, are precisely those where there would have been Flemish immigrants for hundreds of years. Deconstructing the idea of English exceptionalism is a major task I see for myself.

Interview Mike Pitts ■

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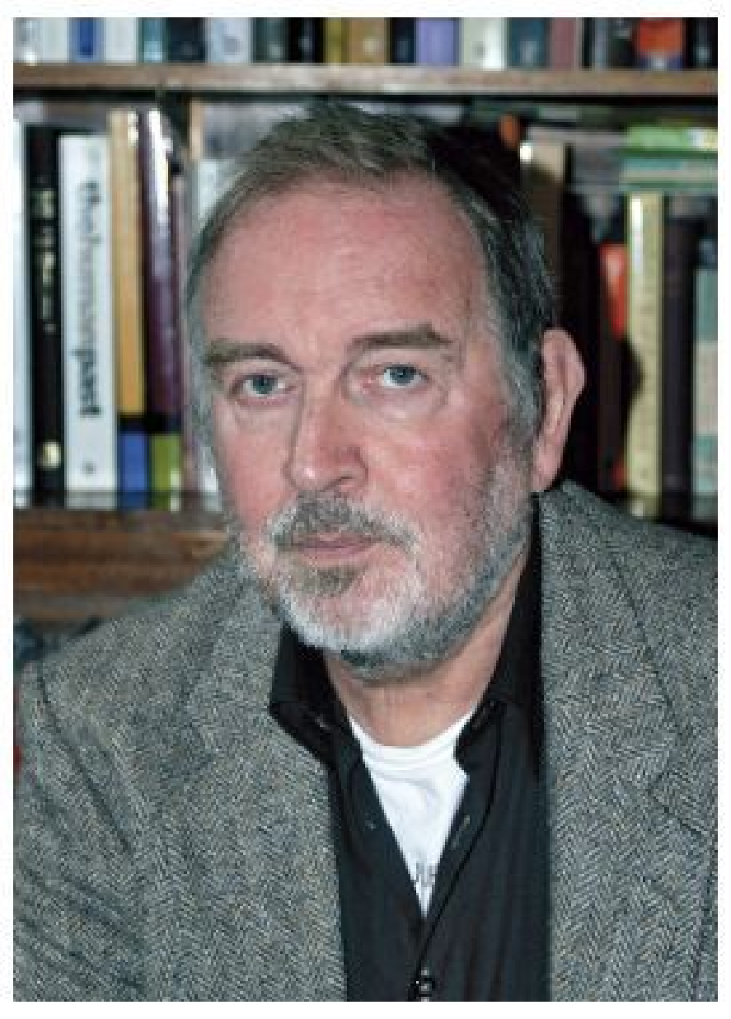
Greg Bailey on broadcasting



I first encountered the "Atlantis-Thera theory" while rifling Donovan's surprisingly archaeo-friendly bookshelves exactly 50 years ago. His yacht was then sailing near Thera (Santorini), in the very waters described by classicist JV Luce in my find: *The End of Atlantis: New Light on an Old Legend* (Thames & Hudson 1969). I suppose the mystically inclined songwriter was interested in Plato's lost civilisation.

But if I imagined that the case for Santorini, such as it was, was then closed, it seems I was wrong. If the legendary city-state recalled by Egyptian scribes and recounted by Plato indeed had any specific historical reality in Minoan Thera or its catastrophic volcanic end, this was challenged by *Atlantis Rising: Secrets Decoded* (National Geographic 2017, Channel 5 June 2019).

ATLANTIS RISING
NATIONAL GEOGRAPHIC

I am no fan of "in search of the lost..." or "Secrets of..." TV archaeology tropes. But this clearly well-funded 93 minute "special" documentary did carry some credentials. I thought I would give it a chance.

Some of us might fondly remember Simcha Jacobovici, the presenter/director of *Atlantis Rising*, as the erudite if somewhat mischievous Biblical scholar filmmaker, the eponymous *Naked Archaeologist* (Vision TV, History International 2005–10). Hollywood director James Cameron, of cinema blockbusters from *Terminator* and *Titanic* to *Aliens* and *Avatar*, acted as Jacobovici's executive producer and sounding board.

Lending the Atlantis documentary a little extra credibility, Cameron's solo dive seven miles into the Pacific Mariana Trench in his Deepsea Challenger submersible broke world records. He is no armchair oceanographer. But perhaps the rationally minded Cameron could have been more than an armchair (possibly deckchair?) producer, literally phoning in his contribution from the set of *Avatar* sequels 2–4 and oceans away from the divers and Atlantean aficionados on (his?) supposedly state-of-the-art marine-lab yacht.

The team criss-crossed the Mediterranean and into the Atlantic in search of Atlantis, taking in what was claimed as Biblical Jonah's Iron Age Tarshish, Bronze Age to medieval Nuragic Sardinia, Maltese Neolithic megaliths, Chalcolithic structures in southern Spain and submerged Bronze Age "stone anchors" in the seas around the Pillars of Hercules/Straits of Gibraltar. Thera/Santorini was instantly dismissed, as Jacobovici became increasingly excited and conspiratorial. Alarm bells rang.

Thus, by the end of the show Atlantean citizens had colonised the Azores in the middle of the Atlantic and, said Jacobovici, Jewish menorahs were actually "an evolution of the Atlantean symbol of concentric circles". Any more or less round prehistoric structure with interlocking chambers anywhere, became "Atlantean architecture as described by Plato".

As one of the research team helpfully suggests, "Your imagination kind of starts to help a bit... It's easy to start to imagine things." Archaeologists realise this. Perhaps Jacobovici and Cameron should have left an enigma alone. For as Plato wrote:

"Zeus the god of gods... wanting to inflict punishment on them that they might be chastened and improve, collected all the gods into their most holy habitation, which, being placed in the centre of the world, beholds all created things. And when he called them together, he spake as follows..." Luce, the translator, then notes, "At this point the [ie Plato's] unfinished *Critias* breaks off."

Undaunted by any of this, in his song *Atlantis* (1969) Donovan helpfully provides, "Way down below the ocean where I wanna be, she may be. My antediluvian baby yeah, yeah, yeah, yeah, yeah."

A footnote for historians of TV archaeology. Our much-missed Mick Aston told me he first met archaeo-curious student Tony Robinson while delivering his lecture on Minoan Akrotiri at Thera.

Greg Bailey researches TV archaeology in the Department of Archaeology & Anthropology, University of Bristol ■

Phase 2

For our feature on the Prittlewell Anglo-Saxon princely burial (Jul/Aug 2019/167), we created a plan showing grave goods around the burial chamber. But as Sue Hirst/Susan M Wright, editor of the new monograph, points out, we didn't get it all right. In the diagram on page 37, an area below the iron stool is labelled "?decayed basket": this is now thought more likely to have been a wooden chest. At top right a collection of gold braid is located outside the coffin: this was in fact in the coffin, where the body's neck would have been. Apologies.

Other excavation and research previously featured here continue to be published elsewhere, the first listed being another monograph. *Archaeology of the Teufelsberg: Exploring Western Electronic Intelligence Gathering in Cold War Berlin*, by Wayne D Cocroft & John Schofield, documents the authors' research into physical Cold War remains as introduced in *British Archaeology* Sep/Oct 2012/126.

We reported excavations at the Bronze Age village at Must Farm, Cambridgeshire as they occurred, most recently in News, Sep/Oct 2016/160 (and see feature Mar/Apr 2012/123). As research continues on the exceptional remains, Mark Knight, Rachel Ballantyne, Iona Robinson Zeki & David Gibson have summarised their views on the history and nature of the village, in "The Must Farm pile-dwelling settlement," *Antiquity* 93 (2019), 645–63.

Other peer-reviewed articles include "A Contextual analysis of the late Roman Pewsey & Wilcot vessel hoards, Wiltshire," by Richard Henry, David Roberts, Michael J Grant, Ruth Pelling & Peter Marshall in *Britannia* 50 (2019), first reported in News Mar/Apr 2017/153; and "Neolithic crannogs: rethinking settlement, monumentality & deposition in the Outer Hebrides & beyond," by Duncan Garrow & Fraser Sturt in *Antiquity* 93 (2019), 664–84, putting the work they described in a feature (Jul/Aug 2017/155) into wider context. ■

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FESTIVAL OF ARCHAEOLOGY 2019

What happened to the Mesolithic?

Adrie and Alfons Kennis (see feature Mar/Apr 2014/135) used aDNA data and skull measurements to create a model of Mesolithic Cheddar Man's head, which can be seen in the Natural History Museum, London along with the original skeleton

© TOM BARNES/CHANNEL 4

Generations of archaeologists have puzzled over one of the key moments in Britain's long story – the arrival of farming. Was it an indigenous initiative, or was it brought by immigrants? A new DNA study has solved the issue in a way few would have predicted.

Tom Booth explains

Did migrant farmers introduce crop-growing and the rearing of domestic animals to Europe? Or were the ideas and materials transmitted from one society to another? When farming finally arrived in Britain around 6,000 years ago, was it brought here by new settlers, or was it copied and adapted by local hunter-gatherers? These questions have plagued and inspired archaeologists in equal measure for over a century.

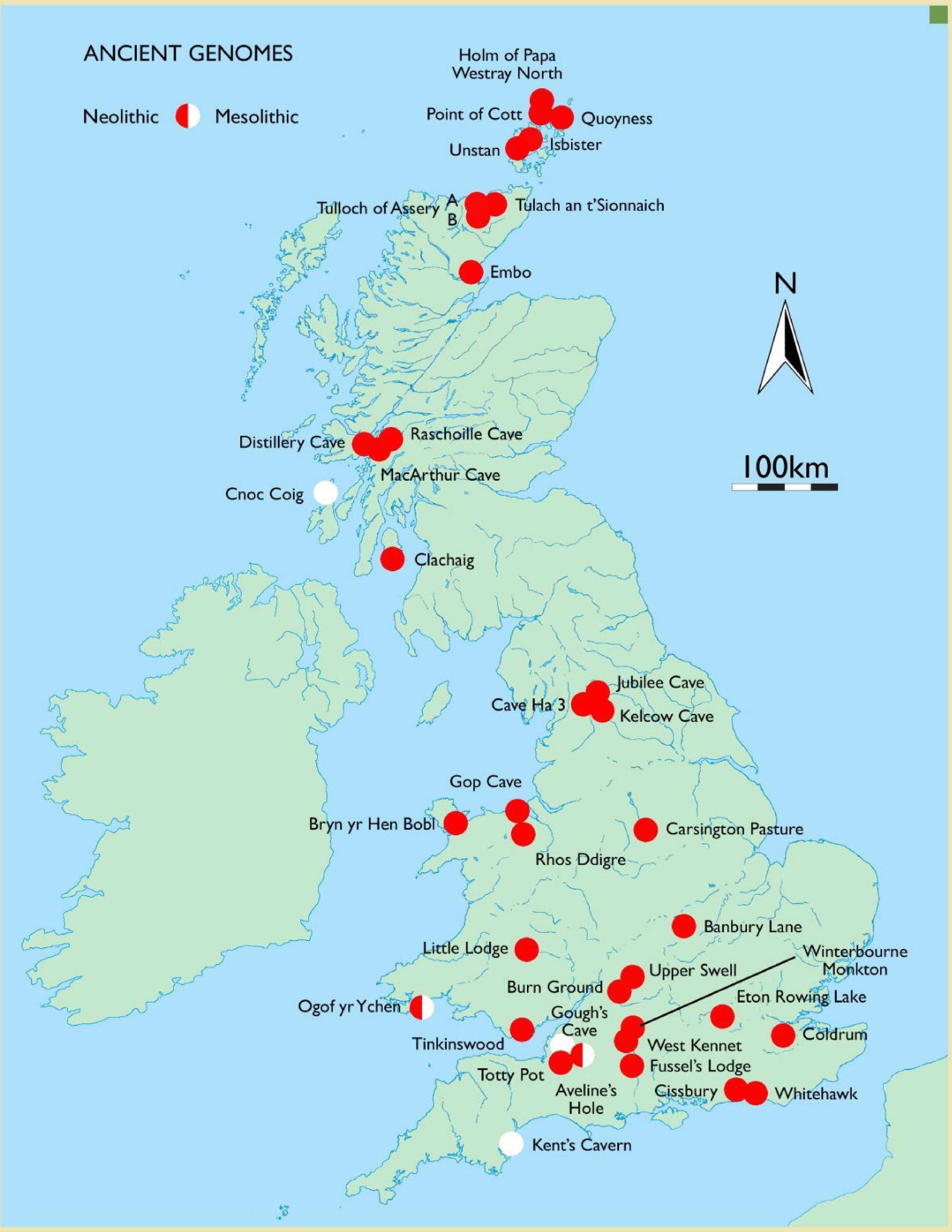
Tackling the issue from the cultural changes we see in the archaeological record – structures, artefacts and plant and animal remains from settlements –

has always been tricky. Such traditions can evolve without substantial changes among the people themselves; archaeology on its own is likely to offer a poor or at least inconsistent proxy of human history. Recent major advances in the study of ancient DNA (aDNA), however, make possible more direct study of population change.

The new possibilities for analysing ancient genome-wide data (sequences of aDNA distributed across an individual's whole genome, comprising 23 pairs of chromosomes and the mitochondrial DNA), have brought great leaps forward in our understanding of the population history of prehistoric Europe. In most areas that have been studied, Neolithic farming lifestyles first appear at the same time as people with ancestors who lived to the east around the Aegean Sea some 8,000 years ago. This suggests that the development of these societies across Europe was heavily influenced by periodic migrations of established farmers over several millennia. The aDNA data show people dispersing out of the Aegean in two directions: west along the Mediterranean, and north-west into central Europe (the so-called "Danubian" route), producing distinct genetic and cultural signatures.

There is ample evidence that the descendants of local Mesolithic hunter-gatherers and people of Aegean ancestry mixed, though the scale and timing of such interactions vary across Europe: in some regions it takes up to two millennia for major admixture between these two groups to occur. Only a minority of the ancestry of most European Neolithic populations is derived from Mesolithic people, however. This is most simply explained by population size: the descendants of migrating groups of farmers greatly outnumbered local populations of hunter-fisher-gatherers.

Right: Location of sites from which human aDNA was obtained for the study described in this feature


ANCIENT GENOMES
Neolithic
Mesolithic
Holm of Papa Westray North
Point of Cott
Quoyness
Unstan
Isbister
Tulloch of Assery
A
B
Tulach an t'Sionnaich
Embo
N
Distillery Cave
Raschoille Cave
MacArthur Cave
100km
Cnoc Coig
Clachaig
Jubilee Cave
Cave Ha 3
Kelcow Cave
Gop Cave
Bryn yr Hen Bobl
Carsington Pasture
Rhos Ddigre
Banbury Lane
Little Lodge
Winterbourne Monkton
Upper Swell
Burn Ground
Eton Rowing Lake
Ogof yr Ychen
Gough's Cave
Coldrum
Tinkinswood
West Kennet
Totty Pot
Fussel's Lodge
Aveline's Hole
Cissbury
Whitehawk
Kent's Cavern

BRACE ET AL 2019/CBA

Below: This is the second major aDNA study to investigate immigration in prehistoric Britain; the identification of migrants with Beaker cultures was described in **British Archaeology** *May/Jun 2018/160*

Beakers

How ancient DNA is changing the way we think about prehistoric Britain

Beaker pottery has been recognised as a distinctive feature of ancient Europe for over a century. But who made it? Ian Armit & David Reich describe the astonishing outcome of a major new study

We can now ask and answer questions about past populations, movements and changes that before were completely beyond reach

Dramatic new science

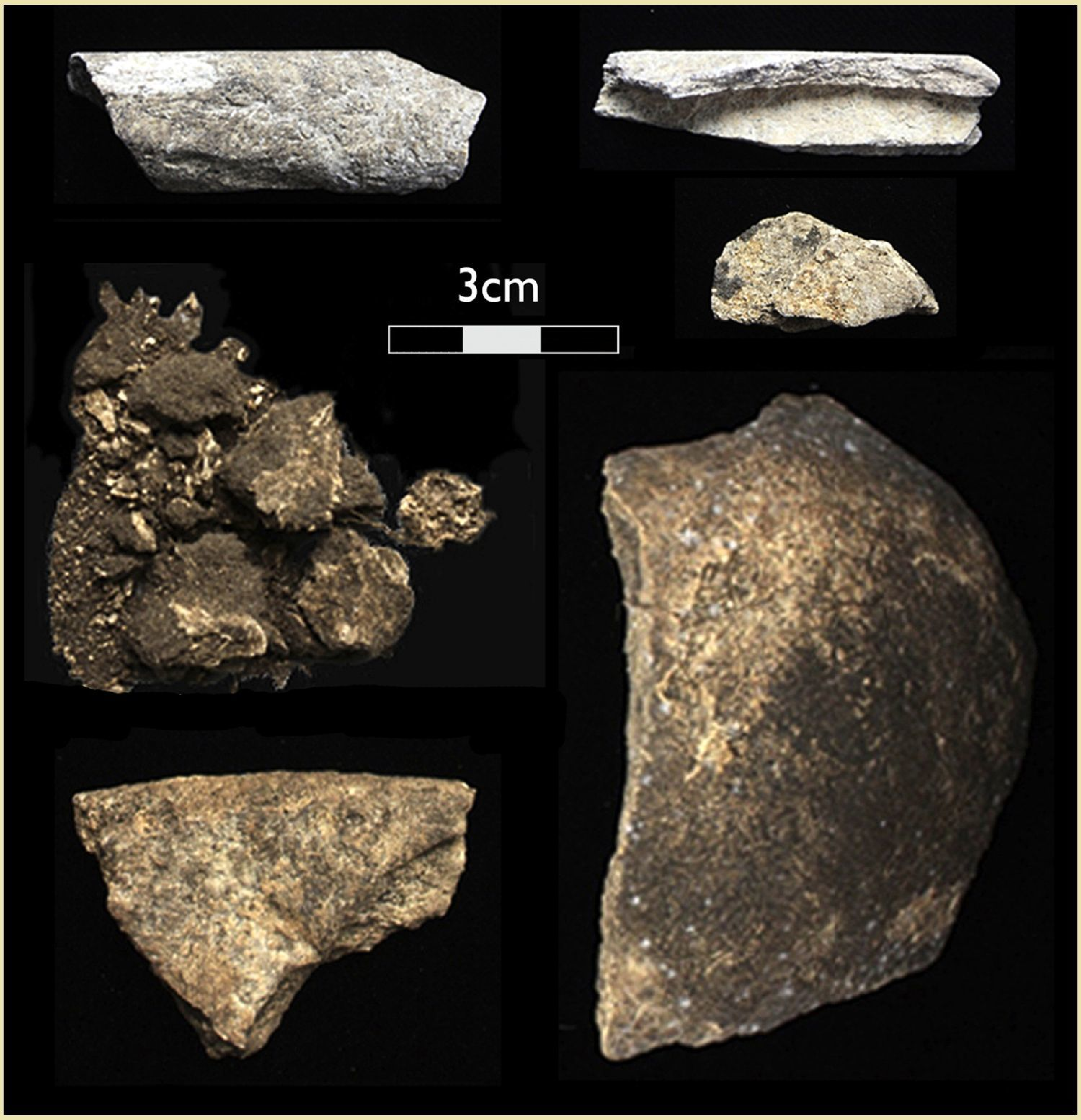
Native or immigrant?

There have long been conflicting interpretations of the archaeological evidence for the role of migration and acculturation in the development of the British Neolithic. Most archaeologists would agree that there was a significant cultural shift around 4000BC. Domesticates, extensive forest clearance, pottery and, most prominently, megalithic tombs and other monumental funerary structures, all first appear then in south-east England. Within a few generations they occur widely across the rest of Britain and Ireland (see feature Jul/Aug 2011/119).

For some archaeologists, this suggests continental migrants bringing all the features of a Neolithic world with them. However, this happened around a millennium after Neolithic cultures developed in adjacent areas of continental Europe. Other archaeologists have argued that features associated with Neolithic behaviour can already be seen in Britain at this earlier time, indicating that local hunter-fisher-gatherer groups experimented with new lifestyles after contact with farmers across the Channel. Conversely, evidence is claimed for continuity of Mesolithic practices into the British Neolithic, such as hunting, particular forms of flint technology, deposition of the dead in caves, and Neolithic monuments built at older Mesolithic sites. Thus, it is said, indigenous people underwent slow social and ideological changes before committing fully to a Neolithic way of life.

Neither scenario is absolute. Archaeologists promoting an acculturation model allow that social networks extending across the Channel would have encouraged some limited gene flow in both directions. Most archaeologists who favour significant migrations would not deny that local groups probably joined immigrant farming communities, or even occasionally adopted some Neolithic habits themselves. And there is a middle way: local hunter-gatherers could have taken on Neolithic

CHARLTON ET AL/JOURNAL OF ARCHAEOLOGICAL SCIENCE



Left: Excavations at large shell middens left by generations of coastal fishers on Oronsay, in the Inner Hebrides, occurred most recently in the 1970s. Human remains among the waste suggest people were buried in the mounds, perhaps having died on the small island when visiting to fish and hunt.

A 2016 study by Sophy Charlton and others (Journal of Archaeological Science 73) used ZOOMS to determine species represented by small bone fragments from Cnoc Coig: in the photo, at top left is seal and top right pig, and the rest are human. These are the most recent Mesolithic human remains from the UK, some dated to around 4000BC and contemporary with the earliest Neolithic farmers in Scotland. aDNA was obtained from a skull fragment

practices from small groups of influential pioneer farmers from continental Europe.

Nonetheless, there remains a large hypothetical element in the debate when the evidence is restricted to hard-to-interpret artefacts and monuments. The question remains: who were the prime movers in the adoption of farming in Britain, local hunter-fisher-gatherers or established farmers travelling to Britain from continental Europe?

Here come the farmers

For a new approach to this question, we analysed genome-wide DNA data extracted from 73 individuals from Britain dating to before and after 4000BC. An archaeologist used to working with ancient sites and artefacts may find this a small sample for resolving such a significant and complex issue, but this would be misguided. Genome-wide data from a single individual provide rich information not just on that person's ancestry, but also the ancestry of their ancestors. This is information on potentially thousands of people, most of whose remains are unlikely to have survived, let alone be found. We can treat each ancient individual as a population of ancestors, allowing robust inferences about ancient human histories.

Mesolithic human remains from Britain are scarce, and we were able to include only six such individuals in our study, all predating 4000BC. Importantly, however, we did successfully obtain aDNA from a woman whose cranial bone has been radiocarbon dated to the late fifth millennium BC. She was buried in the Cnoc Coig shell midden on the island of Oronsay in the Inner Hebrides, just before or possibly contemporary with the first appearance of Neolithic farming practices in Britain.

These six people were all genetically similar to other populations who lived in Mesolithic Europe. The Cnoc Coig woman has none of the Aegean ancestry which characterises Neolithic farmers from continental Europe. There seem to have been no substantial biological interactions between Mesolithic populations of Britain and farming communities inhabiting continental Europe over the thousand years preceding the arrival of farming here.

By contrast Aegean ancestry was the majority ancestry component in all

Left: The UK's most complete Mesolithic skeleton, from Gough's Cave, Somerset and known as Cheddar Man, was found in 1903. It is radiocarbon dated to around 8250BC. aDNA from a temporal bone was included in this study, revealing the man probably had blue/green eyes, dark brown or possibly black hair, and dark or black skin, consistent with Mesolithic genomes from the continent

© TOM BARNES/CHANNEL 4

analysed 67 individuals associated with Neolithic material culture or who post-dated 4000BC. There is therefore a strong association between the transformation of the archaeological record, and transformation of ancestry in the British Early Neolithic. The coarseness of our data means that this change could have occurred over several hundred years. But even when we allow for this, the shift in ancestry we see is too large, too quick, and too persistent to be explained without invoking movements of people into Britain from continental Europe.

Furthermore, our results are also inconsistent with a scenario where small groups of influential farmers kickstarted the development of Neolithic practices among local communities. If that had happened, we would expect British Neolithic populations to maintain significant ancestry from people who inhabited Britain during the Mesolithic. Our results strongly favour the introduction of Neolithic practices to Britain by movements of established farmers from continental Europe.

Where did they come from? The current lack of Neolithic aDNA from the continent close to Britain, particularly from modern-day France, means we cannot yet identify the precise origins of the UK's earliest Neolithic farmers. However, British Neolithic populations are genetically more similar to Neolithic populations who inhabited Iberia – Spain and Portugal – than those who lived in central Europe. This suggests that British Neolithic peoples mainly descended from groups who dispersed out of the Aegean along the Mediterranean.

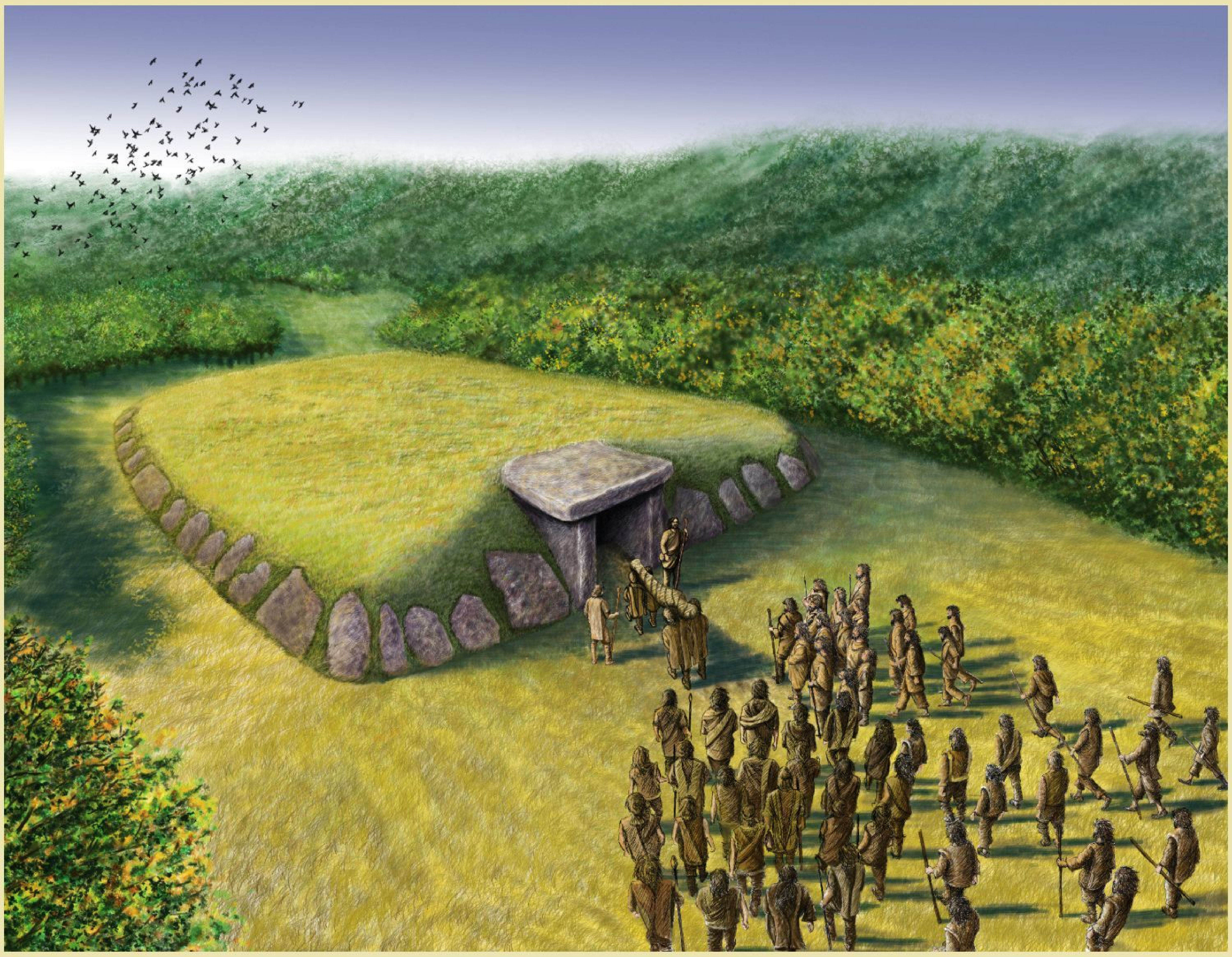
Above: Several groups of human bones were recovered from Jubilee Cave, Langcliffe in the North Yorkshire Dales between 1871 and the 1930s. A temporal bone was radiocarbon dated in this project to 3650–3375BC (Early Neolithic) and provided aDNA which indicated the remains to be those of a male individual

HUMPHREY BOLTON/GEOGRAPH

On the face of it, this is surprising. Parallels have long been recognised between the archaeology of Neolithic Britain and Neolithic cultures of central Europe such as the Linearbandkeramik (LBK), rather than with the south. However, British Neolithic farmers do show a small proportion of central European ancestry. This can be explained as the result of successive movements: the Neolithic populations who dispersed west along the Mediterranean moved into northern France from Iberia or southern France, and, before crossing the Channel, mixed to a limited degree with Neolithic populations carrying ancestry similar to that we see in central Europe. This is consistent with the archaeological evidence, which suggests cultural connections between Early Neolithic Britain and adjacent continental Europe, particular parts of northern France. It is also consistent with the development of Neolithic megalith-building societies along the Atlantic fringe. It seems the LBK's legacy in Britain was more cultural than genetic.

Meanwhile, a substantial minority ancestral component of British Neolithic populations is derived from the people who inhabited Europe in Mesolithic times. However, most of this ancestry can be explained by prior admixture with local groups descended from Mesolithic populations in continental Europe. The amount of detectable ancestry from British Mesolithic populations that is carried through to the Neolithic is small, and in some cases not significantly greater than zero. Individuals from Wales and the west of England show next to no detectable ancestry derived from local Mesolithic people.

We see the highest levels of British-specific admixture in Scotland. Two



Left and below: An Early Neolithic stone-chambered long barrow at Coldrum, near Trottiscliffe, Kent was excavated in 1910 and the 1920s, finding remains of at least 17 adults and children. Radiocarbon dating confirmed the presence of two successive burial platforms, from around 3900–3850BC and 3650–3150BC respectively. aDNA was obtained from skull fragments that could belong to either burial phase.

The site has been owned by the National Trust since 1926 in memory of Benjamin Harrison, a local antiquary, and can be visited in daylight hours. The illustration by John Shipperbottom was commissioned for a new interpretation panel installed on site in 2012

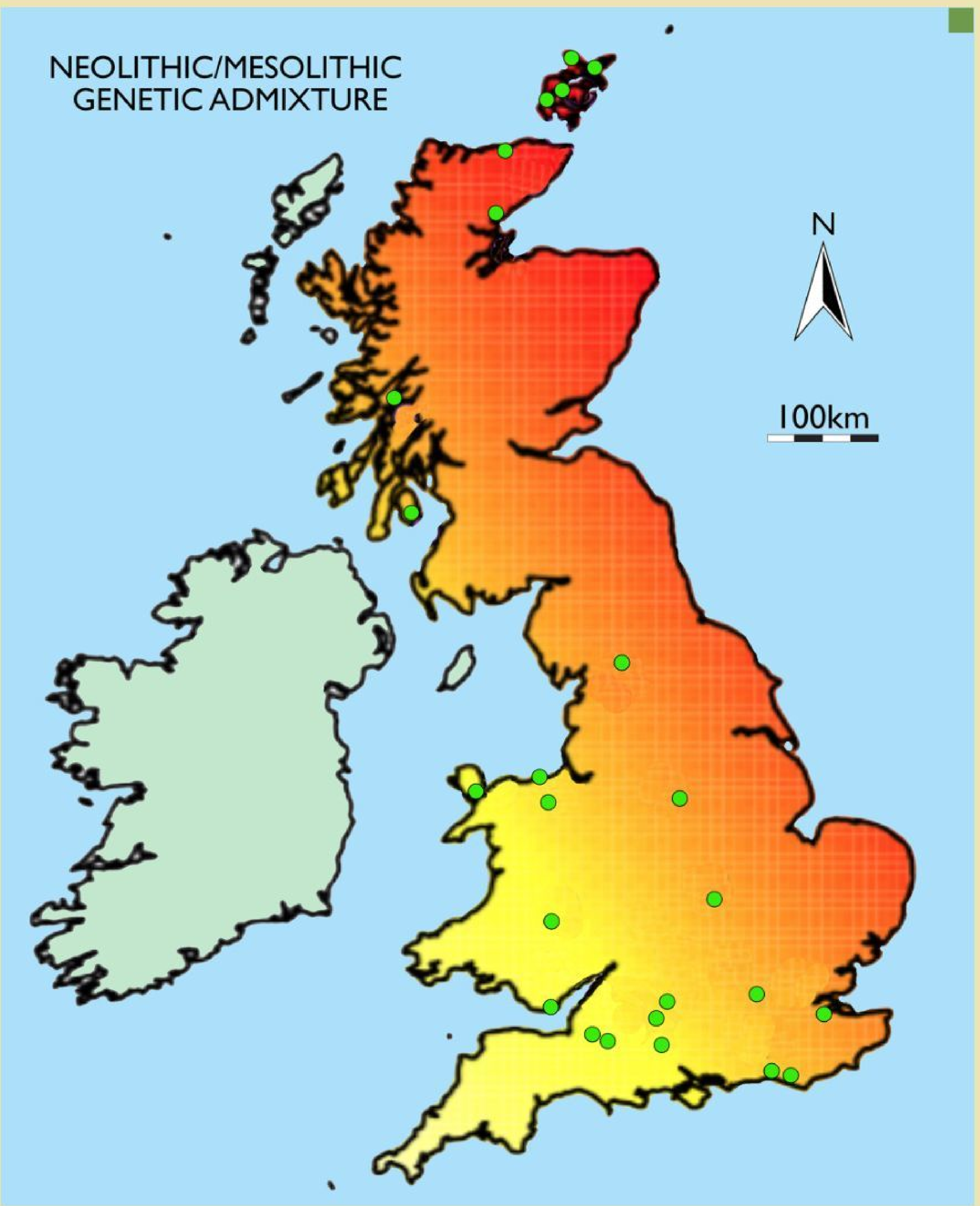
© NATIONAL TRUST/JOHN SHIPPERBOTTOM, CHRIS GUNNS/GEOGRAPH

Early Neolithic individuals from western Scotland had ancestors within the last three generations whose ancestry was predominantly derived from British Mesolithic populations. Though Mesolithic populations had only a small long-term genetic legacy, the two populations there did mix in the early days.

From east and west

In the past the British Neolithic has been characterised as odd compared to the rest of Europe, in terms of the prime role of acculturation attributed to its development. What we have shown in our aDNA study is that the Neolithic transition in Britain is indeed strange when compared to other parts of Europe, but in the opposite way: genetic evidence for the adoption of farming by local groups of hunter-fisher-gatherers is unusually scarce in Britain compared to other studied areas of Europe.

Why do British Mesolithic populations have such a small genetic legacy in the Neolithic? It is unlikely these two populations were naturally averse to mixing, on the evidence for contact between similar populations in other parts of Europe, as well as the direct evidence for mixing from western Scotland. The persistent predominance of Aegean ancestry in European Neolithic populations is most easily explained by farming lifestyles facilitating more rapid population growth, generating growing disparities in population size between incoming farmers and their descendants compared to local Mesolithic hunter-fisher-gatherers. In these cases Mesolithic populations would have only a small long-term genetic legacy even if the two groups mixed completely. An extreme version of this scenario would explain the low levels of British Mesolithic ancestry present in Neolithic Britain. On the one hand Neolithic populations entering Britain may have been particularly adept at exploiting this new territory, and grew unusually rapidly. On the other Late Mesolithic populations of Britain may have been particularly small and distributed at low density.



BRACE ET AL 2019/CBA

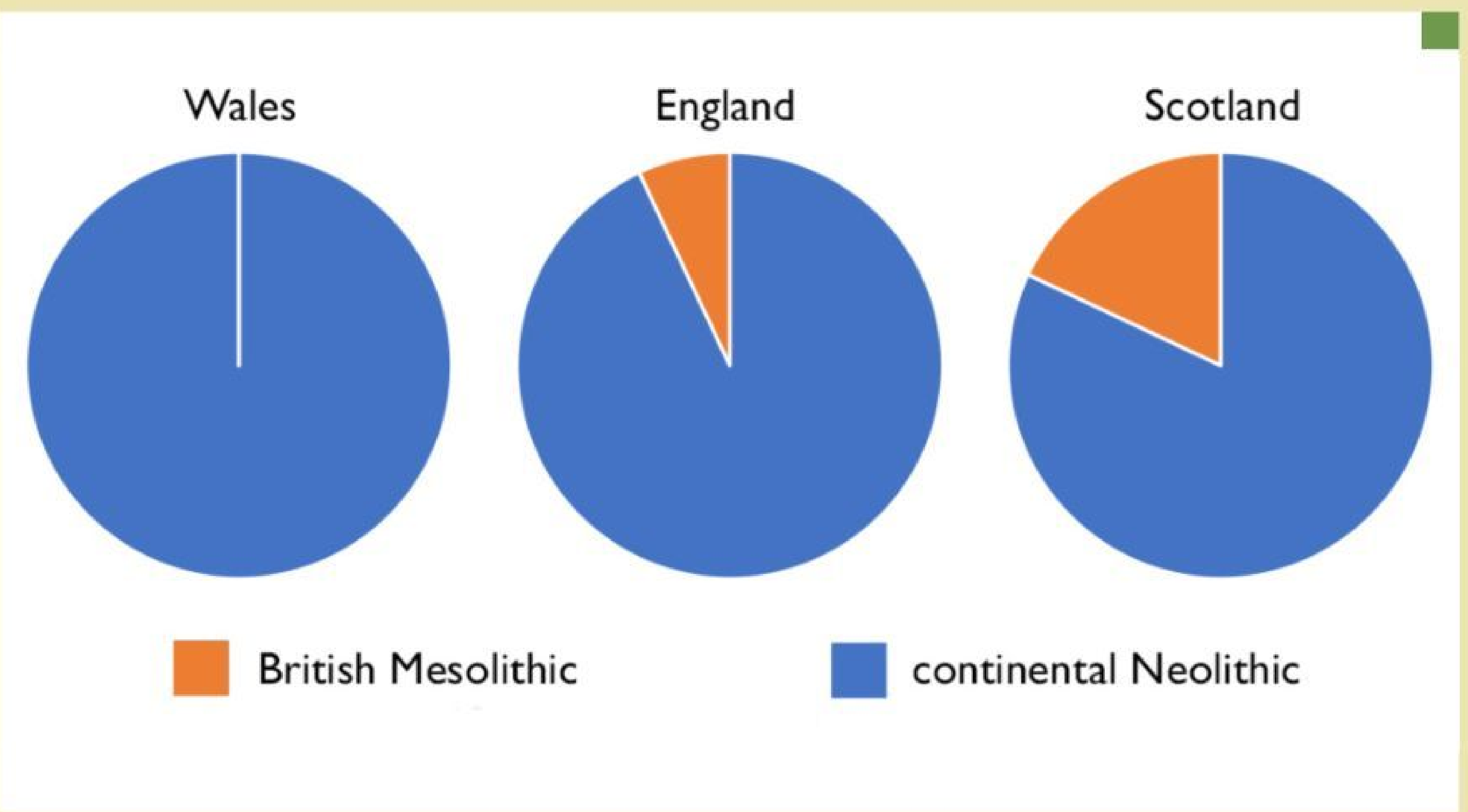
Above: Mesolithic ancestry in Neolithic populations in Britain increases from south-west to north-east, perhaps reflecting separate arrivals of people from west and east, with more native mixing in Scotland

In British Neolithic populations, ancestry derived from people who inhabited Europe during the Mesolithic follows a positive south-west to north-east cline: Mesolithic DNA is more apparent in the east than the west. Taken at face value this pattern could be interpreted as showing that continental Neolithic populations entered south-west Britain and gradually mixed with local groups as they moved north and east. However, as we know that little of the Mesolithic European ancestry we see in British Neolithic populations is actually derived from people who had lived in Britain, this cline must reflect different levels of pre-existing European Mesolithic ancestry in migrating populations.

M PITTS

Left: The burial mound at West Kennet, Wiltshire was excavated in the 19th century and the 1950s, when many human remains were retrieved. It was constructed around 3670–3635BC, and burial followed for no more than 55 years. More than a century later further burials were added, and infilling continued for a thousand years.

A temporal bone from secondary deposits in the south-east chamber provided aDNA, and was radiocarbon dated to 3300–2500BC. The barrow is in the Avebury/Stonehenge World Heritage Site and can be visited and entered



Above: Allowing for a standard level of continental Mesolithic DNA in the British Early Neolithic genome, the proportion of "excess" Mesolithic DNA, presumed to be from mixing with indigenous hunter-gatherers, varies across the UK

T BOOTH

This cline of ancestry from the European Mesolithic suggests that at least two different populations entered the east and west of Britain from different parts of continental Europe around the same time. The idea that more than one population came to Britain from continental Europe is also supported by regional variation in the small levels of central European ancestry we see. Central European ancestry is highest in Neolithic populations from Scotland, lower in those from England and absent from Wales. The east-west divide in ancestry broadly corresponds with regional variability in Neolithic material culture, suggesting that these differences may be partially influenced by different source populations with diverse cultural traditions having settled in particular regions of Britain.

Why did groups of farmers living in at least two different areas of continental Europe simultaneously decide to move into Britain around 4000BC? They had after all reached the shores of the Channel some thousand years earlier. Continental Neolithic farmers first start appearing in Britain soon after the development of maritime exchange networks that connect and influence megalith-building Neolithic societies around the Atlantic facade. Given the British Neolithic belongs to this loose group of megalith-building societies, it may be that the development of these maritime networks enabled movements of people into Britain.

Further analysis of the ancient human genomes we have already obtained, as well as sequencing of aDNA from more skeletons from Britain and continental Europe, will undoubtedly add nuance to this story, and provide more details on the origins of migrating farmers and their interactions with local groups. However, at the very least the simple question of whether there were influential migrations into Britain from continental Europe associated with the development of the Neolithic has been resolved. Britani's Neolithic era was founded on migrations that changed the island's population beyond recognition.

See "Ancient genomes indicate population replacement in Early Neolithic Britain," by Selina Brace, Yoan Diekmann, Tom Booth & 24 others, Nature Ecology & Evolution *(2019). Tom Booth is a senior research scientist at the Francis Crick Institute, London*

Above: Excavations around 1930 at the Neolithic causewayed enclosure at Whitehawk, Brighton, East Sussex found complete skeletons of five individuals and further disarticulated remains. Two of the skeletons have been dated to 3650–3500BC. In the study reported here aDNA was obtained from two disarticulated temporal bones from the enclosure ditches

Left: A new archaeology gallery at Brighton Museum & Art Gallery (Briefing Mar/Apr 2019/165) features seven facial reconstructions, among them this woman based on a skull from Whitehawk. Her aDNA has not been analysed, but on evidence from contemporary genomes she would probably have had skin of a southern Mediterranean/Near Eastern/North African colour, brown hair and brown eyes. The depiction of the Neolithic site by Grant Cox of ArtasMedia was also created for the new displays

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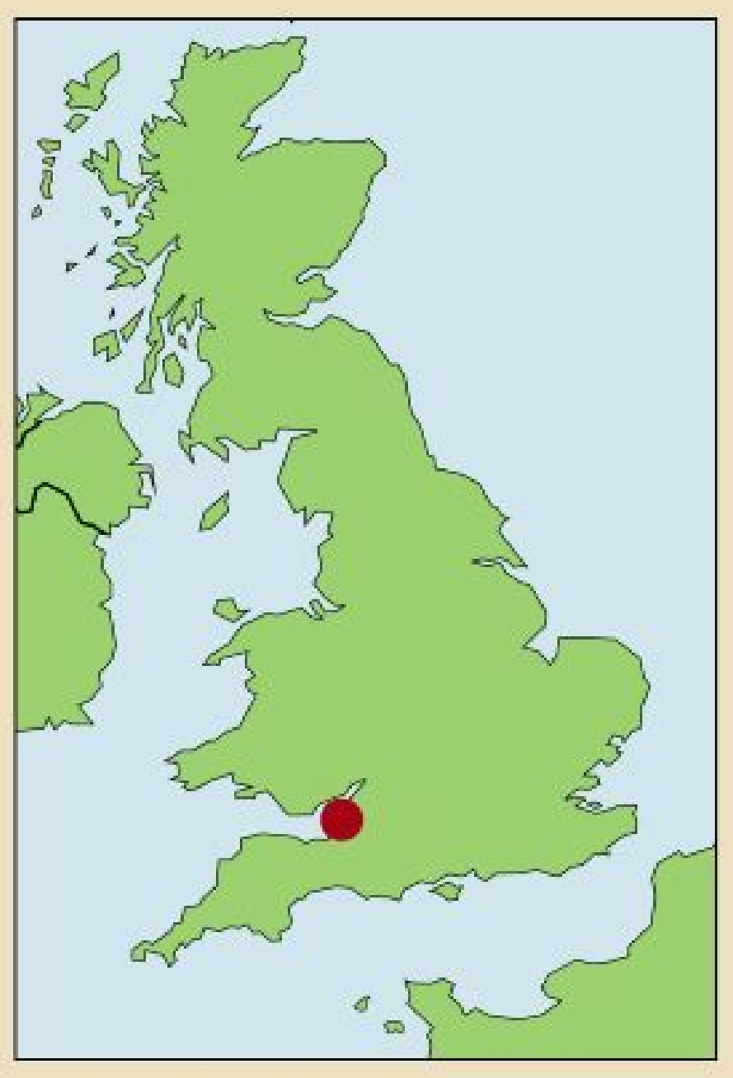
Aveline's Hole: a place for the dead



One of many sites revisited for the ancient DNA study described in the previous feature was Aveline's Hole in Somerset. Remains from the cave have a long history of pillage, poorly recorded investigations and war-time losses. Despite this the museum collection still has important new insights to offer, as Graham Mullan reports

Above: Aveline's Hole cave was discovered in 1797 by two young men chasing a rabbit, and has been much visited since

G MULLAN, BRITISH LIBRARY/MS 33654 (2)

Aveline's Hole contained the largest assemblage of Mesolithic human remains yet found anywhere in Britain. The site in Burrington Combe, on the edge of the Mendip Hills in Somerset, has a long history of investigation.

The limestone cave was discovered in 1797. There may then have been more than 50 skeletons. In 1819 the Rev John Skinner, rector of nearby Camerton, drew great heaps of bones, with flint artefacts and charcoal, but these soon fell prey to souvenir-takers; only three bones and three teeth are known to have survived from that time. Excavation by the University of Bristol Spelaeological Society (UBSS) between 1912 and 1931 recovered remains of some 20 individuals. This work was not fully reported, however, and when the Society's museum was hit in an air raid in 1940 at least the three best preserved skulls were destroyed. Nonetheless, sufficient records exist to show that the surviving collection, radiocarbon dated to the Early Mesolithic (9500–8000BC), could apparently be safely treated as all having come from Aveline's Hole. So the results of a new study caused something of a stir.

Four bones were sampled for ancient DNA as part of the wider analysis described in the previous feature. Two of them matched the hunter-gatherer genome of Mesolithic Britain. But the other two did not, instead matching that of Early Neolithic farmers. New radiocarbon dates confirmed the distinction: the hunter-gatherers lived around 8600BC and 8400BC respectively, while the farmers lived around 3700BC and 3500BC. This made sense from an archaeological and genetic perspective. But what did it mean for the cave?

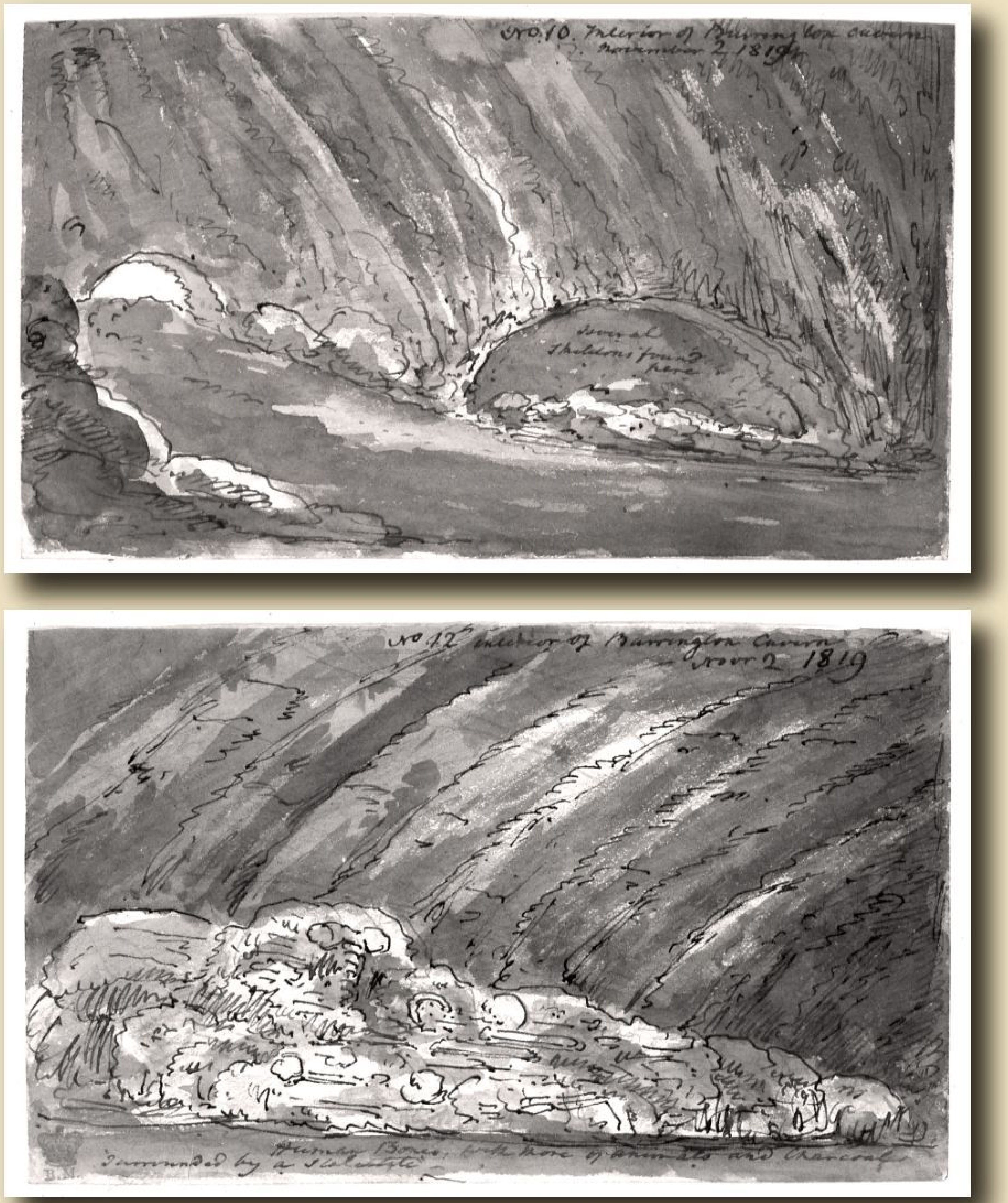
Neolithic burial

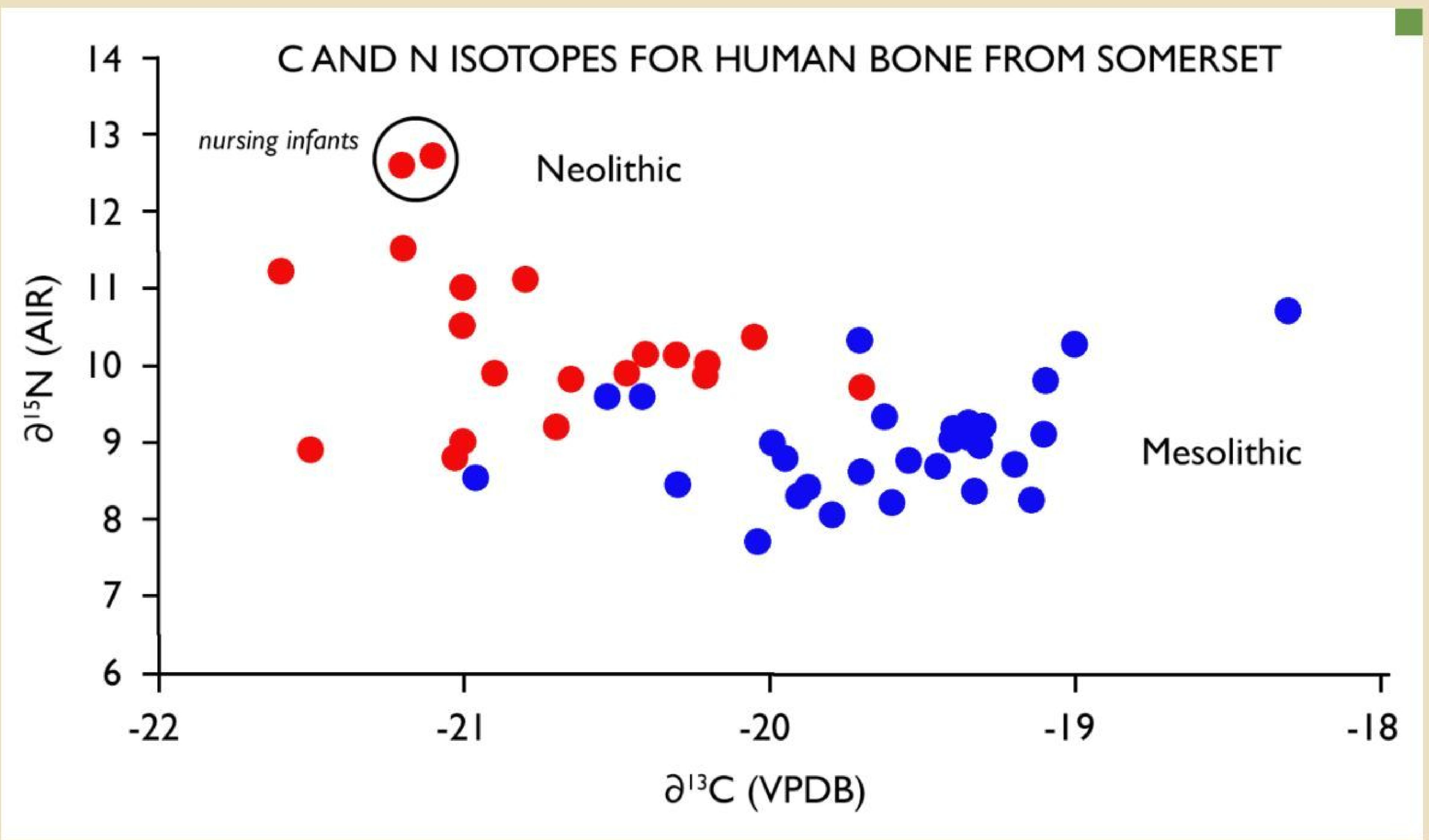
Ten more samples were dated, on top of the 27 already analysed in this and previous projects. Earlier studies were almost all on left ulnae (from the forearm), as this was the most common skeletal element in the collection. But aDNA researchers prefer to sample from the petrous bone, from the cranium, as this has been shown to be the most likely to yield ancient DNA. And these are where the new dates come from.

So we have a large number of radiocarbon dates. Every single one from a post-cranial specimen was Early Mesolithic, but of the crania, roughly half were Mesolithic and half Early Neolithic.

Had there been a mix-up somewhere post-excavation? Fortunately, despite the blitz, the UBSS does have pretty good records – including eye-witness testimony – of what has happened to the museum collections over time. We can be confident that not only was the possibility of confusion in-store very low, but there was no material of the right date and type, ie Neolithic crania, in the store for Aveline's Hole remains to be mixed with. This was a genuine concern, as the new analyses did throw up one anomalous date, from a right temporal. This was shown to be part of the so-called "AH9" skull, now in Wells Museum. Thoroughly investigated back

Below: The Rev John Skinner sketched the cave not long after its first opening; these show "many skeletons... surrounded by stalactite"


No. 10. Interior of Burrington Cavern November 2 1819
Several Skeletons found here
No 12 Interior of Burrington Cavern Nov 2 1819
Human Bones, with those of animals and charcoal surrounded by a Stalactite

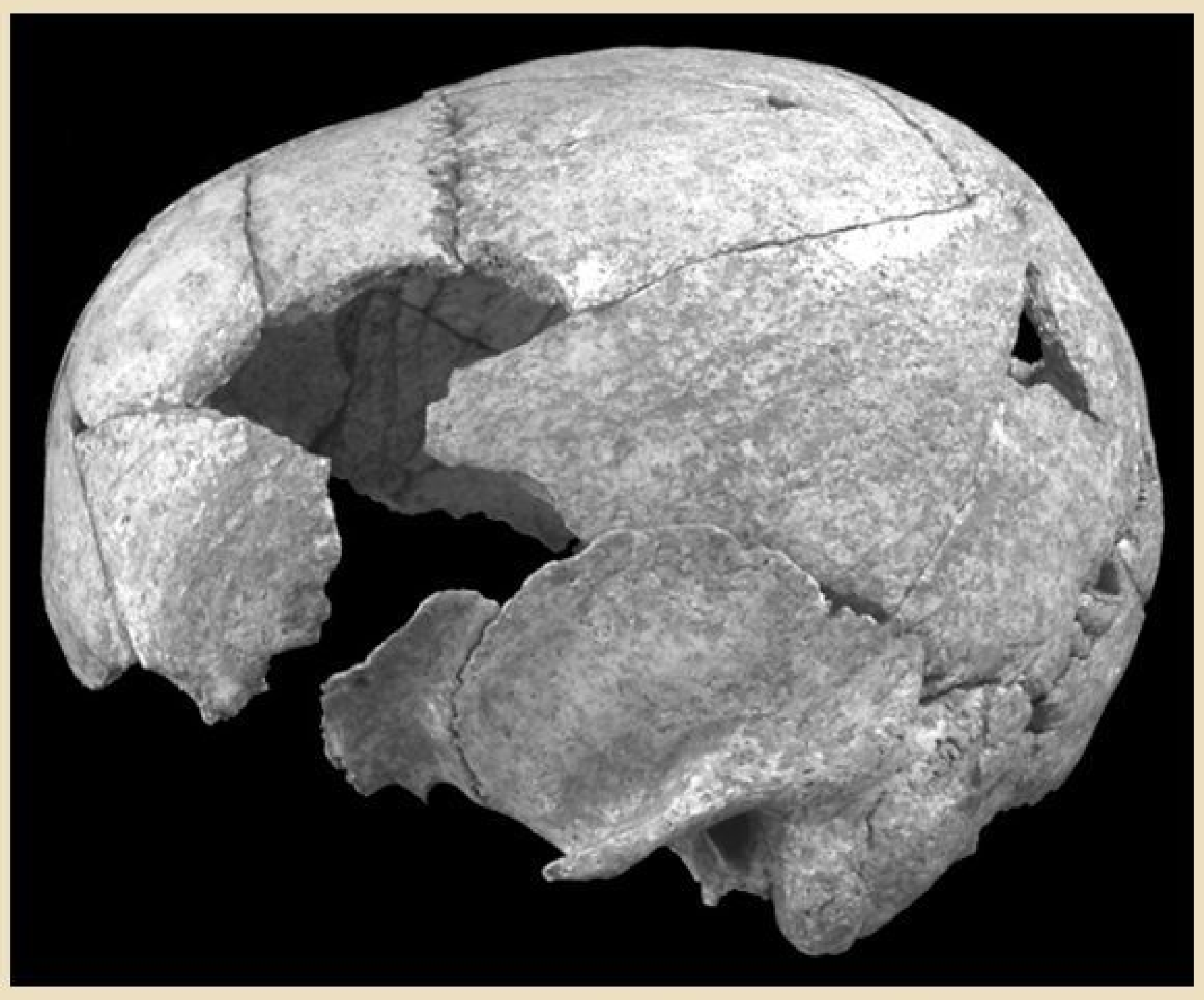


Right: Stable carbon and nitrogen isotope values suggest consumption of land plant and animal foods, with no indication of seafoods, among both Mesolithic and Neolithic individuals; the difference between the two groups is thought to be a result of changing isotopic baselines, with vegetation becoming more open and shifts in atmospheric CO2 concentrations

SCHULTING ET AL/CBA

in 2012, it almost certainly had nothing to do with Aveline's Hole and is dated to AD1485–1650.

That leaves the archaeology. Nothing of Neolithic age was found during the excavations. The flintwork had been comprehensively described by Roger Jacobi, the latest specimens being two mid-Mesolithic flakes. All the rest and all other finds were attributable to either the Early Mesolithic or the Late Upper Palaeolithic (13,000–9500BC). However, our Neolithic forebears have form for this sort of behaviour. For example, from Hay Wood Cave, also on Mendip, all the dated human material is Neolithic whereas the archaeology is either earlier – Mesolithic – or later – Early Iron Age. Quite separately from the much older Mesolithic practices, Neolithic people buried parts of their dead in caves, perhaps in ways they could relate to their use of stone-chambered burial mounds in the region.



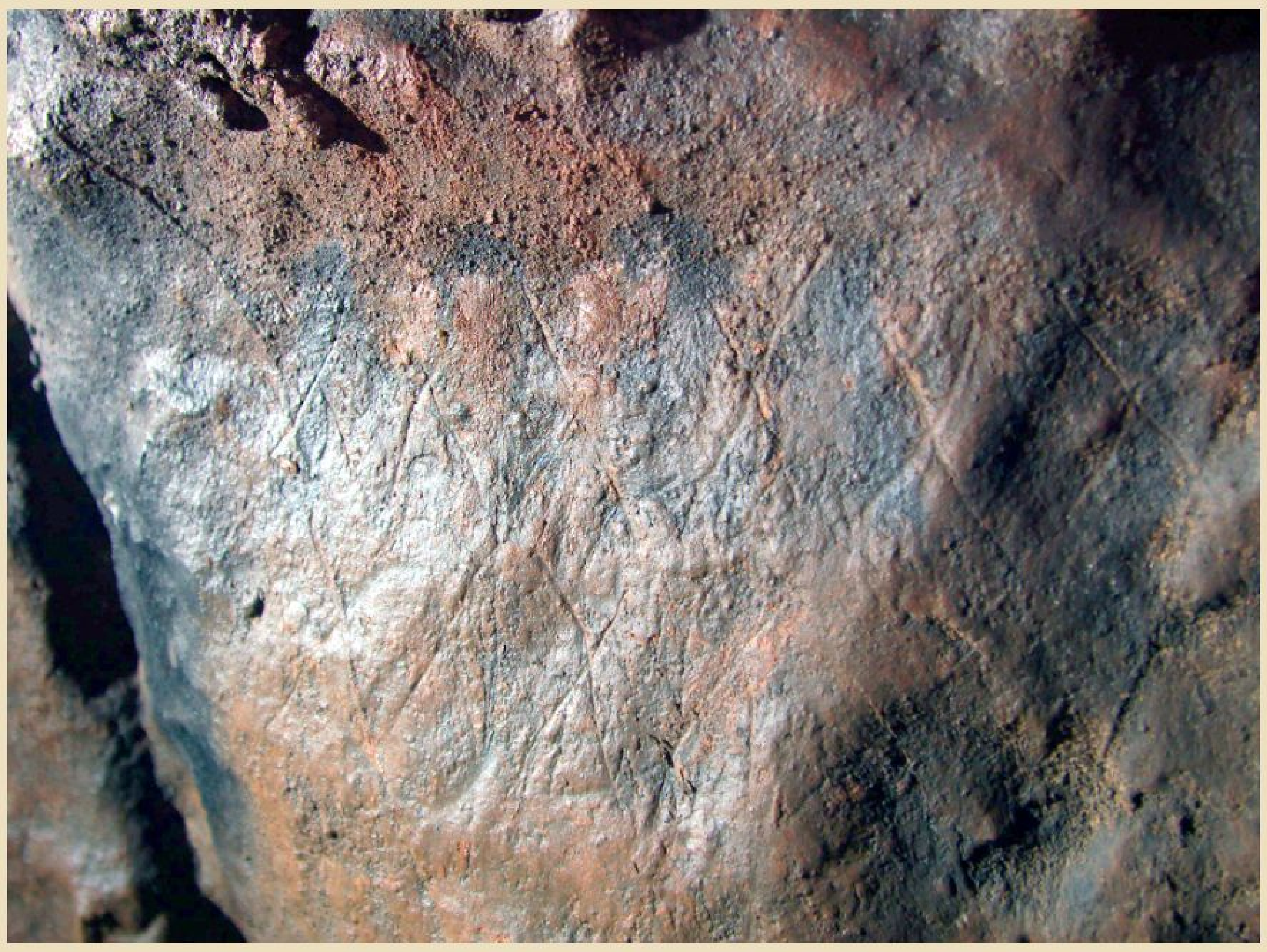
Left: Cranium 4 from Aveline's Hole is now seen to be Early Neolithic in age

Right: Skull A, destroyed in 1940, might be Upper Palaeolithic

Right: Skull 0, a 19th-century find from the cave now in the Natural History Museum

Palaeolithic burial?

This work has two implications for future study. Firstly, it gives us a further insight into Neolithic burial practices, especially in the likelihood of finding Neolithic remains divorced from any contemporary archaeology. The second, and arguably the most important, is that it casts doubt on any analyses of skeletal material that does not include dating of all specimens. For example, in a study published in 2005, dental microwear seemed to be considerably less than might be expected for hunter-gatherers. The new dates suggest that at least some of the molars analysed are likely to be of Neolithic rather than Mesolithic age, which could account for this anomaly.



Below: The author and Linda Wilson found an engraving in Aveline's Hole in 2003, consisting of two rows of crosses, six above four; artefacts in the cave suggested they might be Late Upper Palaeolithic or Mesolithic in age, and the new study extends the possibilities into the Neolithic (25cm across)

Similarly, there is an implication for the study of engravings discovered in the cave in 2003. The window during which they may have been made now stretches from the Late Upper Palaeolithic to the Early Neolithic, and comparable examples are known from all these time periods.

And there is a final twist in the tale too. In order to glean as much comparative data as we could from the information available, Chris Meiklejohn and Jeff Babb undertook a craniometric analysis on some measurements that had been taken in the 1920s on three specimens (skulls A, B and C), which were subsequently destroyed during the 1940 bombing. Only one of these, A, had sufficient data to be properly considered and, again, it turned out to be remarkable: its most likely attribution is to the Upper Palaeolithic! It was felt by the 1920s excavators that many of the "grave goods" found in the cave were associated with two burials that were further into the cave than the rest, and deeper in the sediment. This could not be proved, as that part of the dig collapsed before it could be recorded, and no human remains could be specifically associated with them. Perhaps now they can.

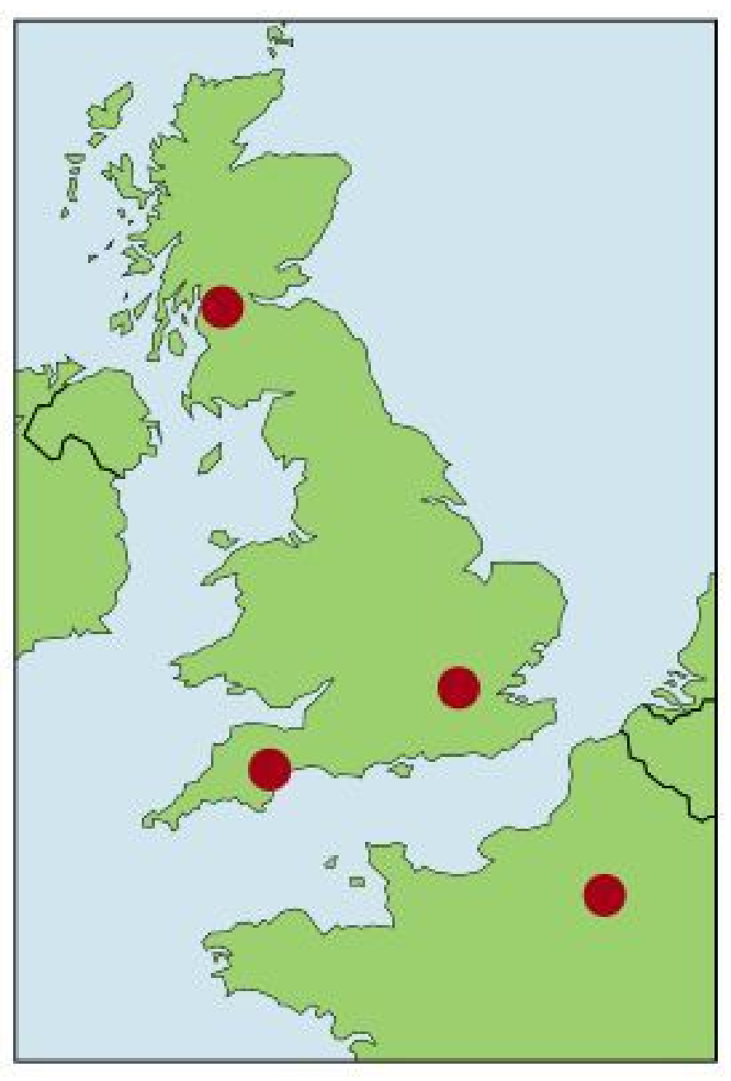
See "Aveline's Hole: An unexpected twist in the tale," by RJ Schulting, T Booth, S Brace et al, Proceedings of the University of Bristol Spelaeological Society *28.1 (2019), see https://ubss.org.uk/sales.php. Graham Mullan is honorary treasurer & editor of the UBSS* ■

ANDREW ATKINSON (ENGRAVING), NATURAL HISTORY MUSEUM, UBSS (2)

The many lives of Notre-Dame de Paris

Opposite: Notre-Dame in flames

Right: "That moment when the building, the street, genuinely, fleetingly, means something different, and the whole process of facadism is revealed"



Archaeologists routinely advise on the historic impacts of construction projects: but, says James Dixon, they don't engage with the public meaning of building sites. Moved by the great fire at Notre-Dame, he reflects on creation, destruction and buildings archaeology

M PITTS

Twitter alerted me to the burning of Notre-Dame de Paris on April 15 and I watched with a mixture of amazement and horror, with much of the world, the video clips and pictures flooding my timeline. It was not until I got home and switched to rolling television news coverage that it hit me how otherworldly the event was. Social media had shown groups of people, watching, filming, but the news cameras found something else. Groups the same size, also watching, but praying and crying on their knees in the streets as the fire, that looked as if it could only end with the complete destruction of the building, took over the skyline before them. This was an event of today, those praying were modern people, but their reaction felt like something of the past. Not from the past, not anachronistic, but like it cut

LELAISSERPASSERA38/WIKIMEDIA/CC BY-SA

CANGADOBA/WIKIMEDIA/CC BY-SA

Above: The fire seen from the east end; the roof was covered in scaffolding for repair work

through much of what we imagine the modern world to be, back to an earlier time of more public religion, especially dramatic as it got dark and watchers became illuminated by flames.

Arguments about the various responses quickly came to dominate coverage, especially after we learned that the damage was not as bad as initially feared. Why did people care so much about this building when they seem not to care as much about people suffering elsewhere? How was so much money found so quickly to restore Notre-Dame when it was not available for other, better causes? There is a long list of such grievances and they're all correct, as is the feeling that Notre-Dame should be restored, and the debate – argument really – between faithful reconstruction and modern reinterpretation rumbles on.

British Archaeology readers will have their own takes on the event, its meaning, the form of the reconstruction. You may even be involved. But what the burning of the cathedral said to me is that no building is ever as interesting a thing as when it's either on its way up or on its way down, when it's being created, or it's being destroyed. We can never understand buildings without understanding those moments. Sometimes it takes a short period of trauma or violence for us to really see for ourselves what a building means. Buildings, especially those that exist at the centennial or millennial temporal scale of a cathedral, happen really slowly (many people were relieved to hear that the fallen spire was 19th century, not medieval). As horrific as a fire of this kind might be, we can use it as an opportunity to understand something different about buildings and built heritage.

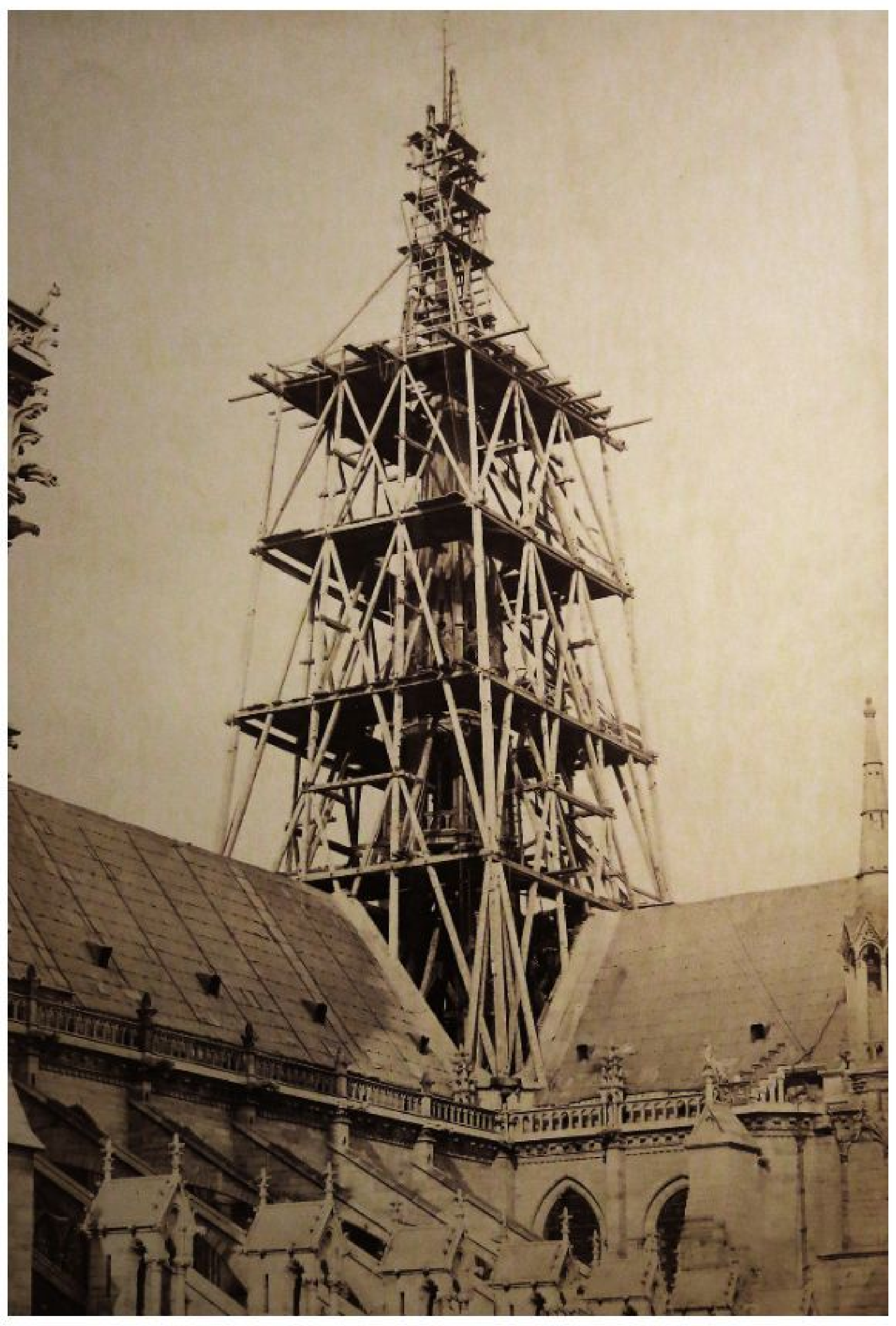
The traumatic reveal

Stepping away from Paris for a moment, I can give a more prosaic parallel from closer to home. In Liverpool in January, a builder, angry at an unpaid £600 invoice, climbed into a mechanical excavator and proceeded to smash into the lobby of the Travelodge at Liverpool Innovation Park, destroying most of its fittings. A ceiling fixer whose work was among that destroyed said to the press, "The handover was today. Everything completed, we'd put the last tile in, cleaned up and made sure everything was perfect. Then some idiot in a mini-digger decided to drive through the middle of the building."

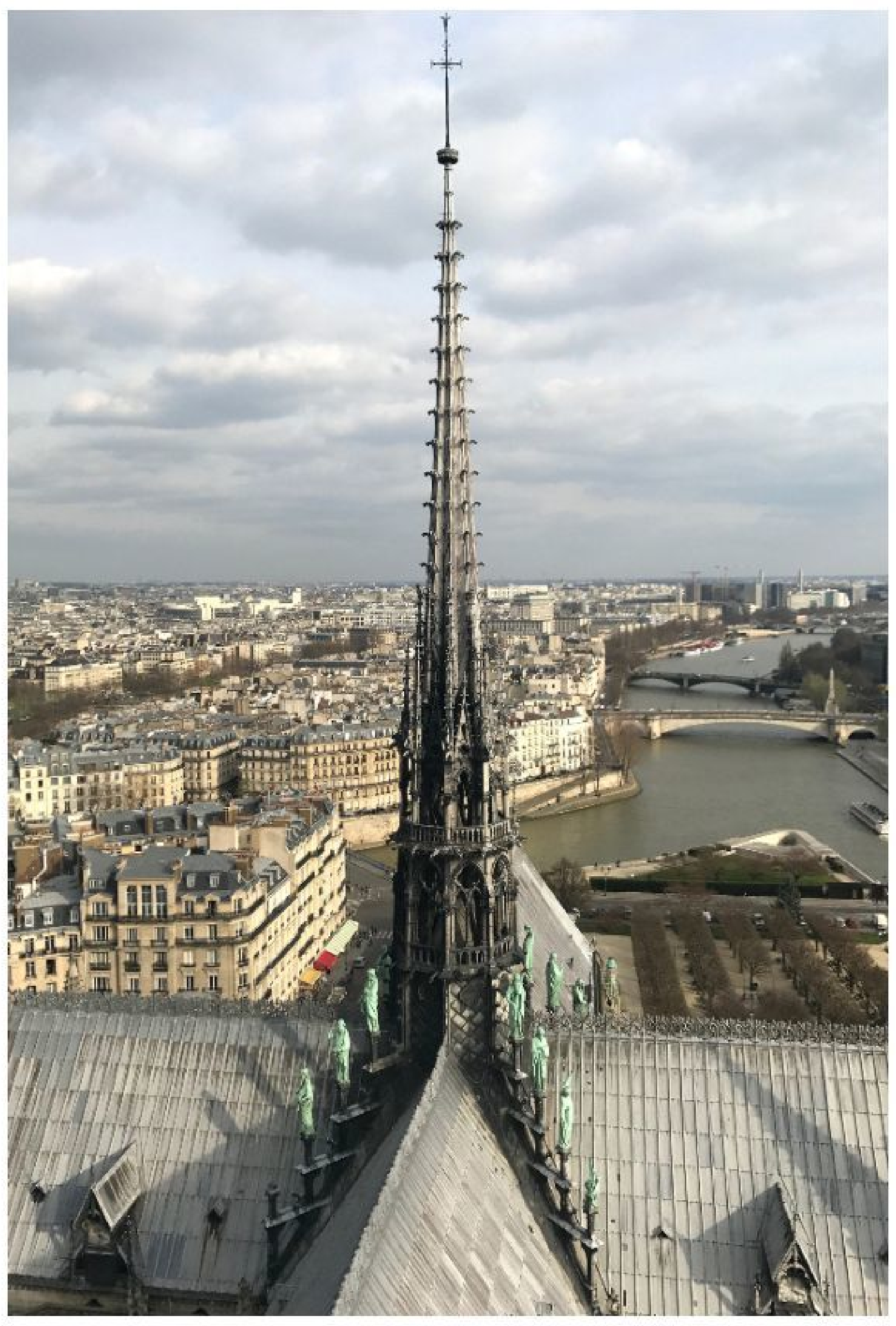
We cannot condone the criminal act here, but it's obvious that the aggrieved builder, as he swung the digger's bucket through the sliding doors, the strip lights and the hung ceiling of that suburban Travelodge, was creating a moment of rupture in the narrative of the perfect lobby that would otherwise have gone unremarked. Because of his action we know about the pay dispute, and we can see in the video of the aftermath all of the constituent parts of a hotel lobby, thrown together in a way we would never usually be able to observe. I've written about this before in the context of riot landscapes, as the archaeological equivalent of a mélange, a kind of geological shearing event

Below: A crowd watches the fire from the Pont de la Tournelle

GODEFROYPARIS/WIKIMEDIA/CC BY-SA



Left: By 1800 Notre-Dame's 13th-century spire had been taken down, after centuries of decay; a new spire with oak frame and lead roof was completed in 1859



Right: Looking east over the spire, with statues of the 12 Apostles by Eugène Viollet-le-Duc around the base

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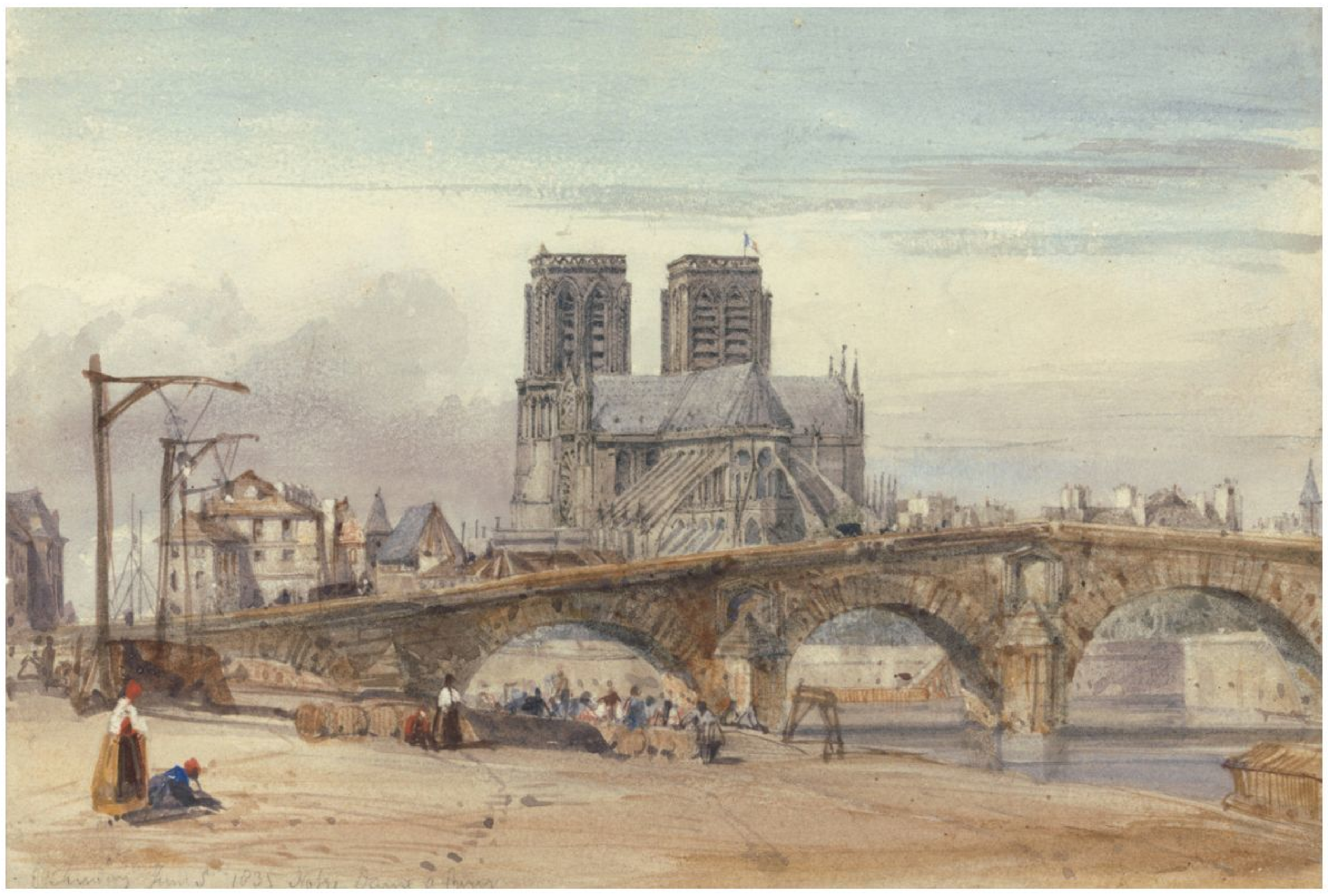
which exposes the whole history of a rock formation. The fire, the riot and the aggrieved builder tear these sites open and we can see everything inside, physical and discursive, laid out for examination.

At Notre-Dame, the building was already there. The potential for future architectural additions was there, flammability of the roof timbers was there, and so were arguments about how appropriate or inappropriate was the sense of grief or the speedy funding. Yet it is only because of that one night of trauma that we saw all of these things at once, strewn across the hotel lobby of central Paris as if a therapy group had written down their hopes and fears privately on pieces of paper, then all shouted them out at the same time.

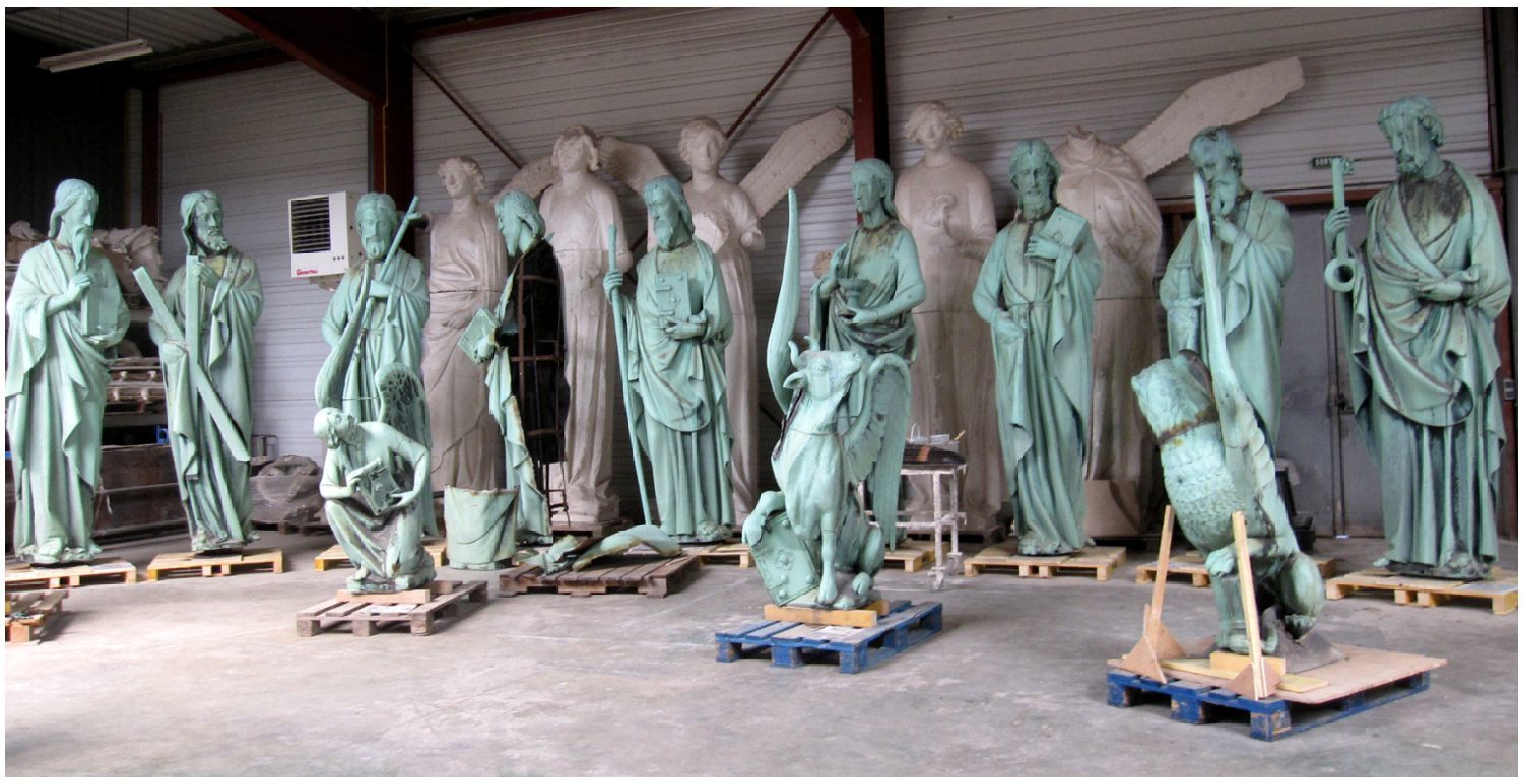
This is such an important thing for archaeologists to address and to understand because it opens the way to new, distinctly archaeological ways of appreciating the built environment that lead us away from our reliance on the tropes of architecture and architectural history that we cling to as a discipline. Much of what we do and how we read buildings is based around structure, fabric, style – all really important for understanding what buildings are, but much less useful for understanding what they mean. Even the kinds of drawings we produce – plans, sections, elevations – replicate architects' drawings and can only add so much to nuanced understandings of buildings as live things. New technology is starting to address this problem! Should we take an interest in the reconstruction work at Notre-Dame? Sure. Is the burned roof simply a problem to be fixed? No. It tells us more about what Notre-Dame means today than anything else in the recent past.

Illusion of permanence

Buildings are the most numerous and accessible things available to archaeologists, and it's really important that we understand them properly, not just as examples of architectural design from specific points in the past, but as processes. A building has a meaningful existence from the first thought that it might be a solution to a particular problem, right through to the point at which it has been and gone and no longer has any physical trace or existence in memory, if that could ever actually happen. Understandably, the bit of that process we tend to focus on is when it looks like a building and has or had people using it. Construction and demolition sites, however, are ever-present in our lives, and represent more than just a means-to-an-end.



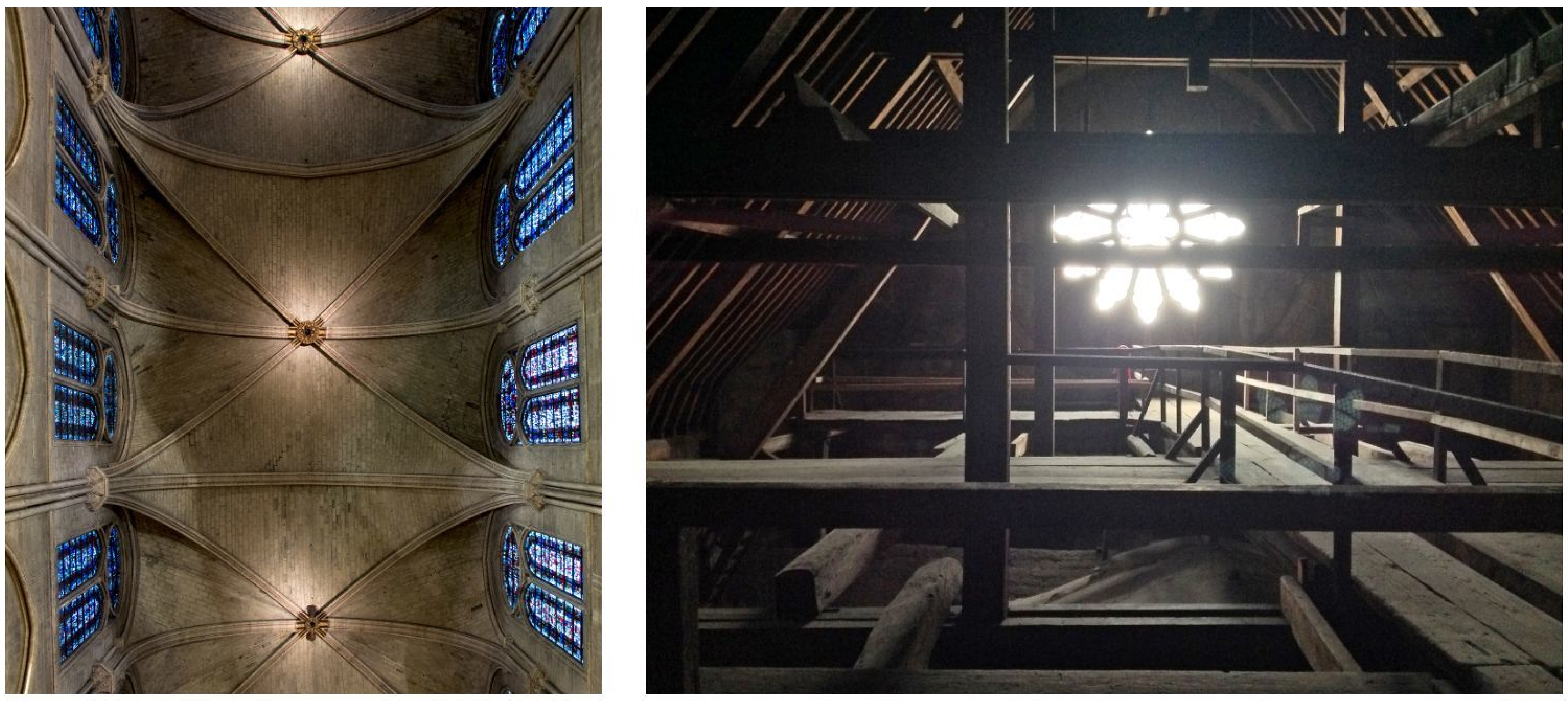
Right: Notre-Dame from the Quai de la Tournelle, 1835 watercolour by William Callow



Below: Viollet le Duc's Apostles, four Evangelist symbols and a spire-top cockerel had been taken down for the first time four days before the fire, for restoration

YALE CENTER FOR BRITISH ART/PAUL MELLON COLLECTION, ALISON STONES

Before the sites can happen, existing and future buildings, landscapes, people and ways of life are argued over in architects' studios and council meeting-chambers, procedures that heavily involve inputs from archaeologists and heritage consultants. In fact, heritage consultants are routinely asked to assess the impacts on the historic built environment of the construction phases



Above: Medieval roof frame in Notre-Dame, destroyed in the fire and (left) the Gothic rib-vaulted nave ceiling, also partly destroyed

CARLOS DELGADO/CC BY-SA (CROPPED), BERNARD HASQUENOPH/WIKIMEDIA/CC BY-SA

of larger projects, so it's not as if we're not present in the right spaces to think about it. But when archaeologists do that work of understanding the process and impacts of construction and demolition, it is future-thinking, avoiding harm to heritage assets in the imagined perfect world of the "finished" site. What we don't do is continue our engagement and try to understand what the building site means, what a half-built building means for a street, or a skyline. And while we might often be present during demolition of sites, our watching briefs do not stretch to trying to understand what it means for a building to be part-way to non-existence, not quite something, not quite nothing. Understanding construction and demolition takes the normal future-work of archaeologists, and strips it of its speculative nature, allowing us to think more certainly about now.

The burning of the roof of Notre-Dame de Paris is, in a way, only a small part of this kind of understanding. The building could not quite be said to be under construction, despite the roof works and presence of scaffolding, and it was not destroyed, however much it looked like that might become the case on April 15. However, as arguments over whether the new roof should be a sober reconstruction of what was there before or a bold modern design show, we now have the opportunity to understand the building in the context of contemporary creative processes. And although the majority of the building is still standing, the nature of the fire means we can also understand it in its own right as a half-building. Completion of work on the roof is projected to take up to 40 years. Half-built Notre-Dame is the Notre-Dame of the rest of our lives.

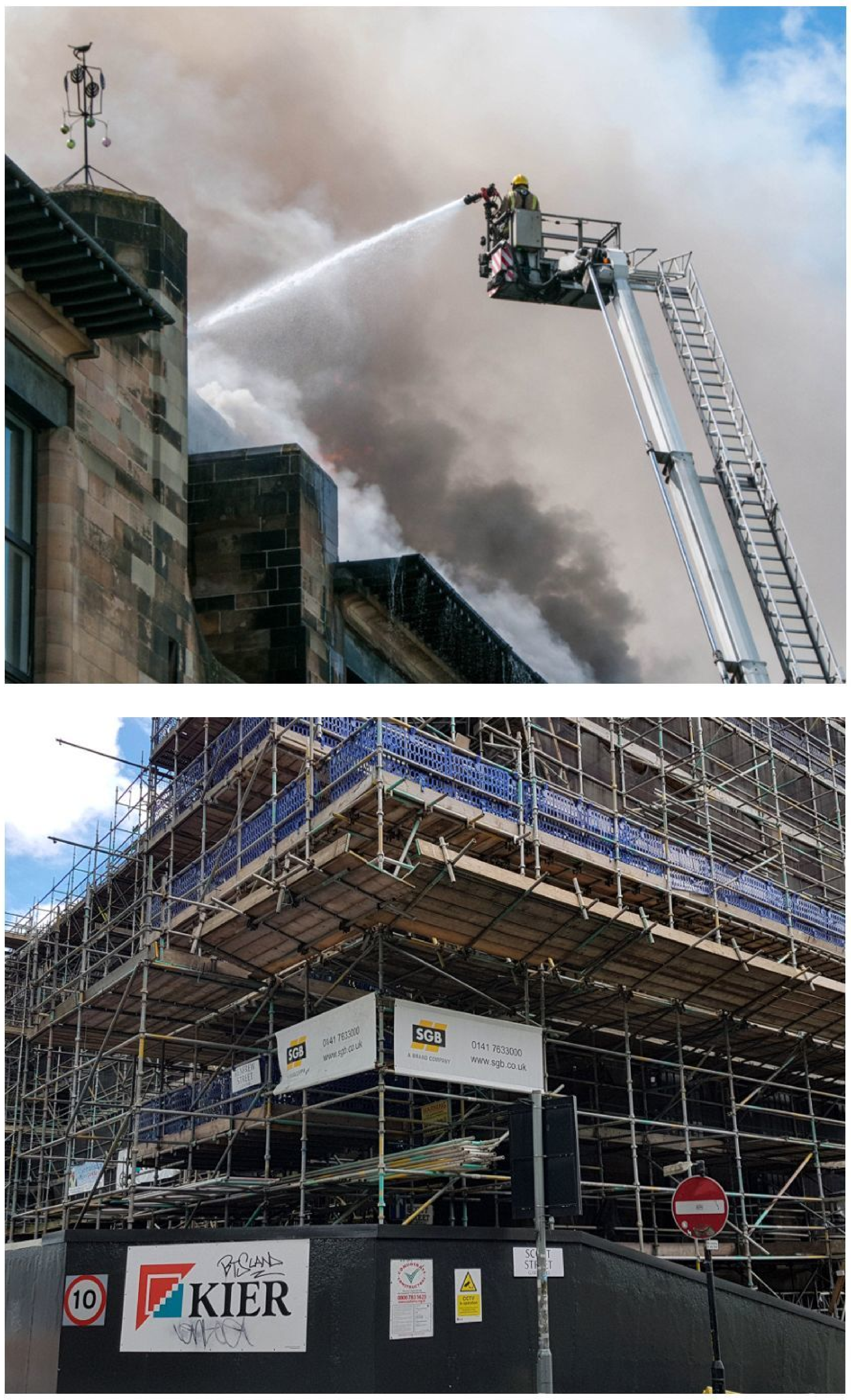
We can approach the Notre-Dame of today at a number of different scales. There is the one we're perhaps used to, where the fire will have revealed aspects of the physical fabric of the building we could not see before. Then there is the building as a whole, which we were able to appreciate without a roof covering for a short time. We shouldn't be sad or dismayed to see it "in this state", especially as it is on the way to being repaired. Seeing photographs of the aftermath of the fire with the interior of the cathedral full of sunlight unmediated by stained glass is some way from the intended experience of the building, and is surely not the ideal encounter; but it is what the building was for that short time. It is as much part of Notre-Dame as any other time before or since.

Even as I write, the news is reporting the first service to be held in the cathedral since the fire, everything as normal, but with everyone in hard hats. It's not something we can ignore. As archaeologists, we have to deal with the conditions of the site on the day we arrive. We can only find what's there. Right now, what's there is a medieval cathedral without a roof. It also exists differently in the landscape, especially as part of the Paris skyline. In relatively quick succession, we will have been able to experience the largely medieval to 19th-century building and silhouette, followed by the scaffolding of the previous works, then the cathedral on fire, soon the building topped by monumental scaffolding and cranes and, in due course, a new roof, perhaps a new silhouette, a change to the Paris skyline which it must be hoped will retain the illusion of permanence at least until the fire has passed out of living memory.

In-between states

Perhaps comparable is the phenomenon of facadism, where a building is demolished but, usually with heritage justification, the street frontage is retained and a new building raised behind. There are countless examples of this happening across the country and debates around it usually ask whether it is an appropriate use of historic architecture, or whether it is somehow "lying" to front your modern office block with an historic facade. Archaeologists don't need to be part of that debate. What is much more interesting for us is that point in time when the facade of a building is left standing as an object in its own right. A new building behind an old facade is so much less of a disruption than walking past a facade and being able to look through the windows and see not occupants, offices or a living room, but a JCB or a site hut, maybe even some archaeologists. If there's anything of archaeological interest in facade-retention, it's that moment when the building, the street, genuinely, fleetingly, meant something different, and the whole process of facadism was revealed.

This isn't just a matter of waiting for



Below: The Glasgow School of Art burns in 2014, and under restoration in 2017; a second fire caused extensive damage in 2018

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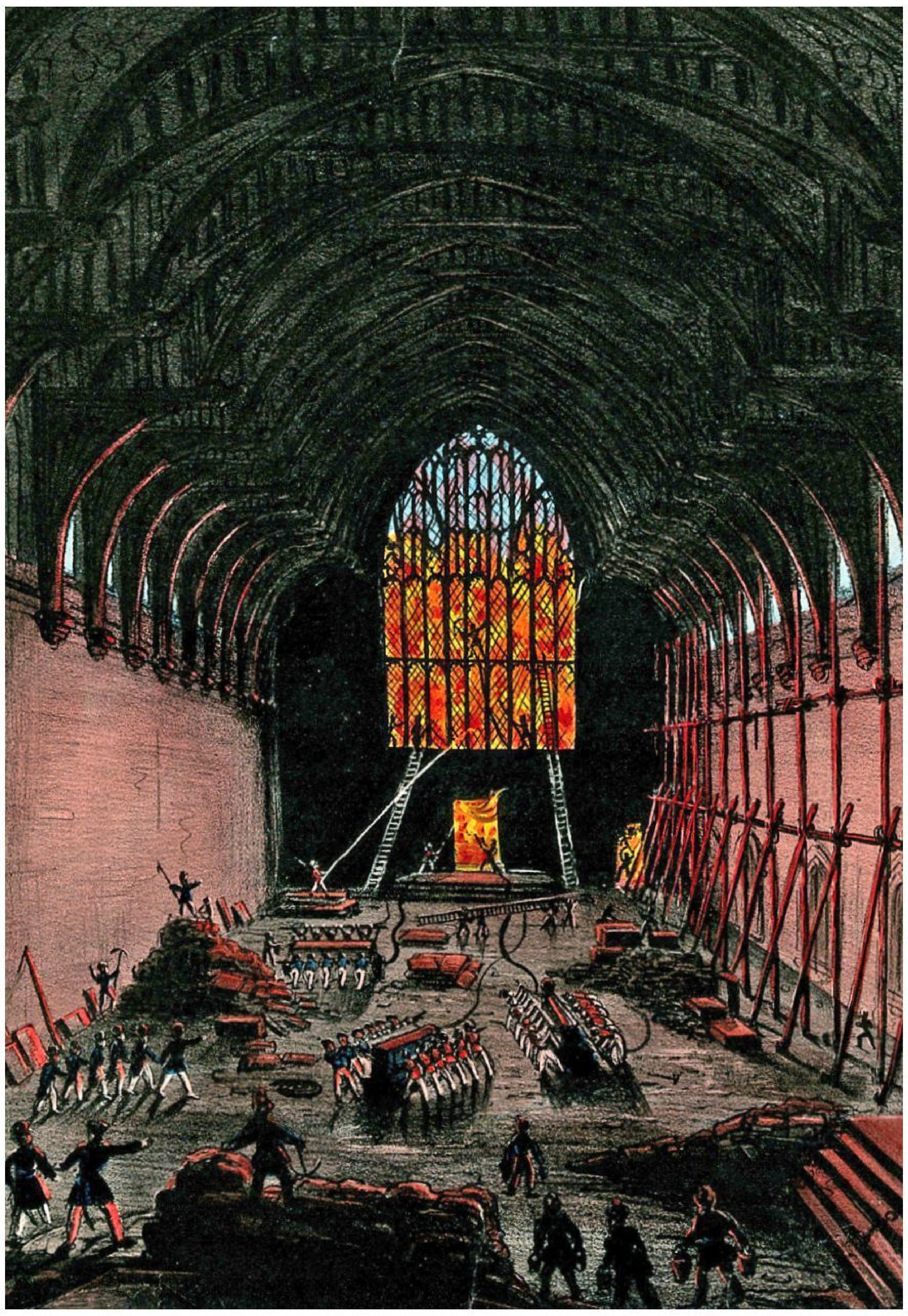
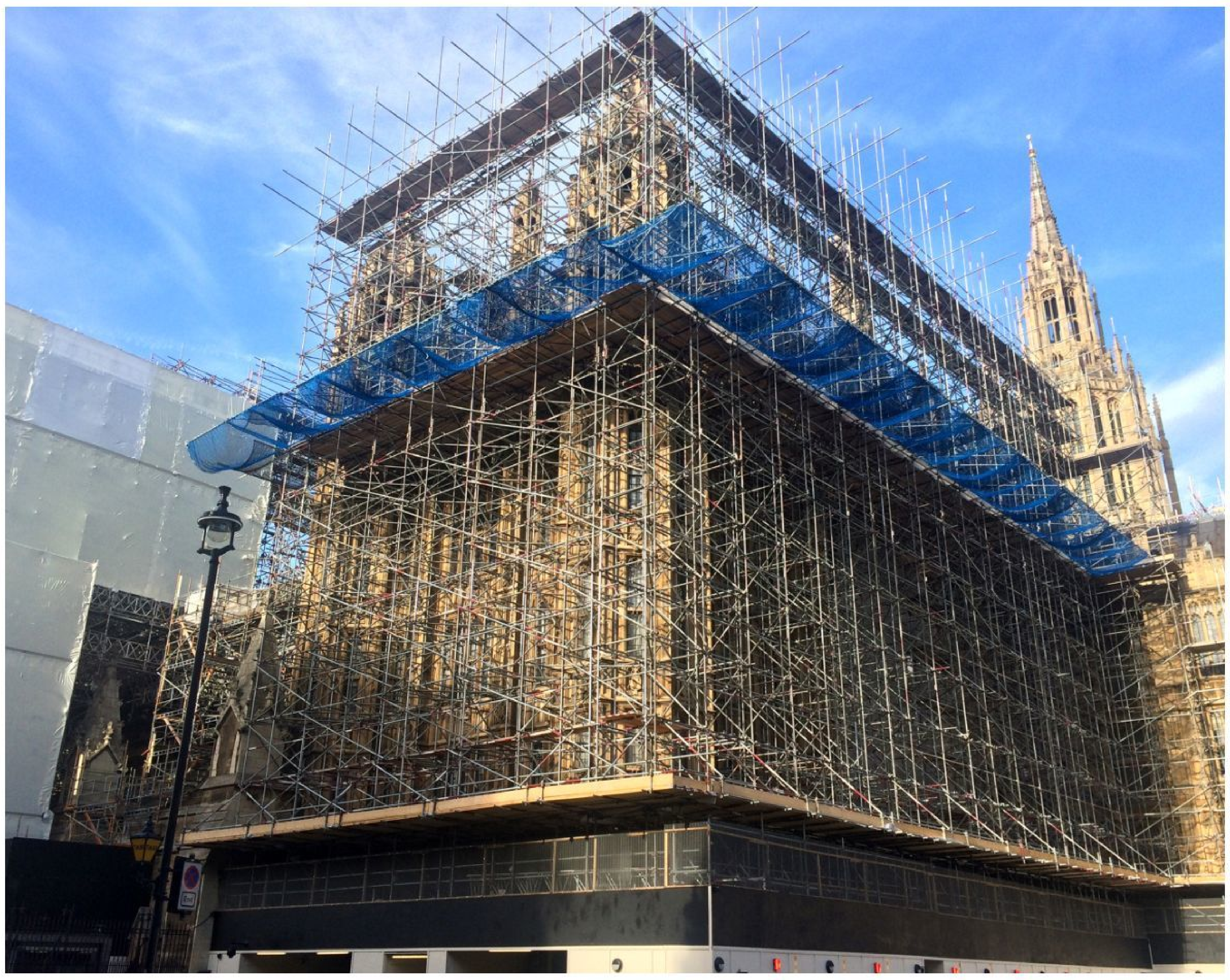


Above: Fire-fighters save Westminster Hall from the 1834 conflagration that destroyed most of the Palace



WELLCOME COLLECTION, M PITTS (2)

Above right: "We can try to understand the Palace of Westminster as a building that is undergoing a very slow destructive process that MPs have been reluctant to address"

traumatic events to happen and using them to understand things differently, which screams opportunism and sensationalism. We can also use this appreciation of in-between states and the befores and afters of what we commonly think of as "finished" buildings to plan better for the future. Take, for instance, the Palace of Westminster in London (feature May/Jun 2017/154). We can look at this complex of buildings and understand it as a piece of architecture, noting that it has been continually altered over the years of its existence and is due for a major refurbishment. That, on its own, would be a mistake.

For a start, the Palace is very much "live", as water pouring through the ceiling of the House of Commons chamber and myriad other problems demonstrate clearly. It is already doing something that we can and should understand. It is falling down. What we hope to avoid is the traumatic event where a wall collapses or the Palace catches fire, but we can already try to understand the building as one that is undergoing a very slow destructive process that MPs have been reluctant to address. Every quick fix is a tiny act of demolition; floor tiles from the building are being sold online. This World Heritage Site is being literally dismantled, and as archaeologists we can do something more interesting than just think about the old Palace of Westminster and the new one whenever it comes to exist. We can think instead about the process of the building and its constant, slow degradation, part natural, part the act of people, part the inaction of its occupants. If anything, it will make us more prepared for the event of catastrophic failure of some part of it in the future.

Traumatic events like the burning of the roof of Notre-Dame, or of the Glasgow School of Art, or the Royal Clarence Hotel in Exeter are just that; traumatic events that affect real people and that we understandably approach from the perspective of loss and with an attitude of fixing the problem. This is right and important. However, as archaeologists, we can also take the opportunity to understand the in-between states these buildings find themselves in, and therein better understand what buildings are, how they exist, how they impact lives and landscapes and, perhaps, better prepare ourselves for future catastrophe.

Look around you. None of this will exist forever, but most of it will outlast you. You won't get to work on understanding the thing that comes next, but you can understand how the things of now are changing, sometimes almost imperceptibly and sometimes over the course of one horrific evening. Buildings are most interesting when they're being made or destroyed. Get out there and stare at some building sites. They are what buildings archaeology is.

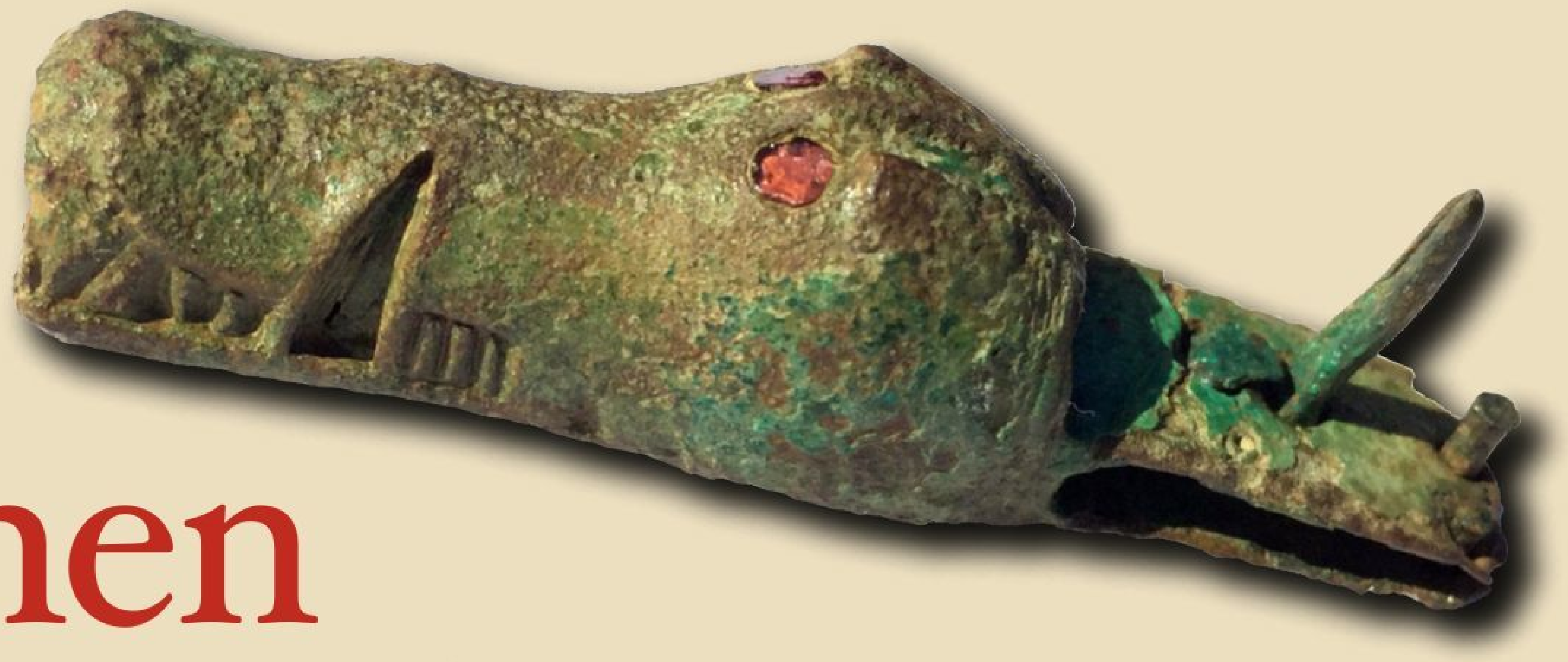
James Dixon is co-editor of Post-Medieval Archaeology, *@James_Dixon* ■

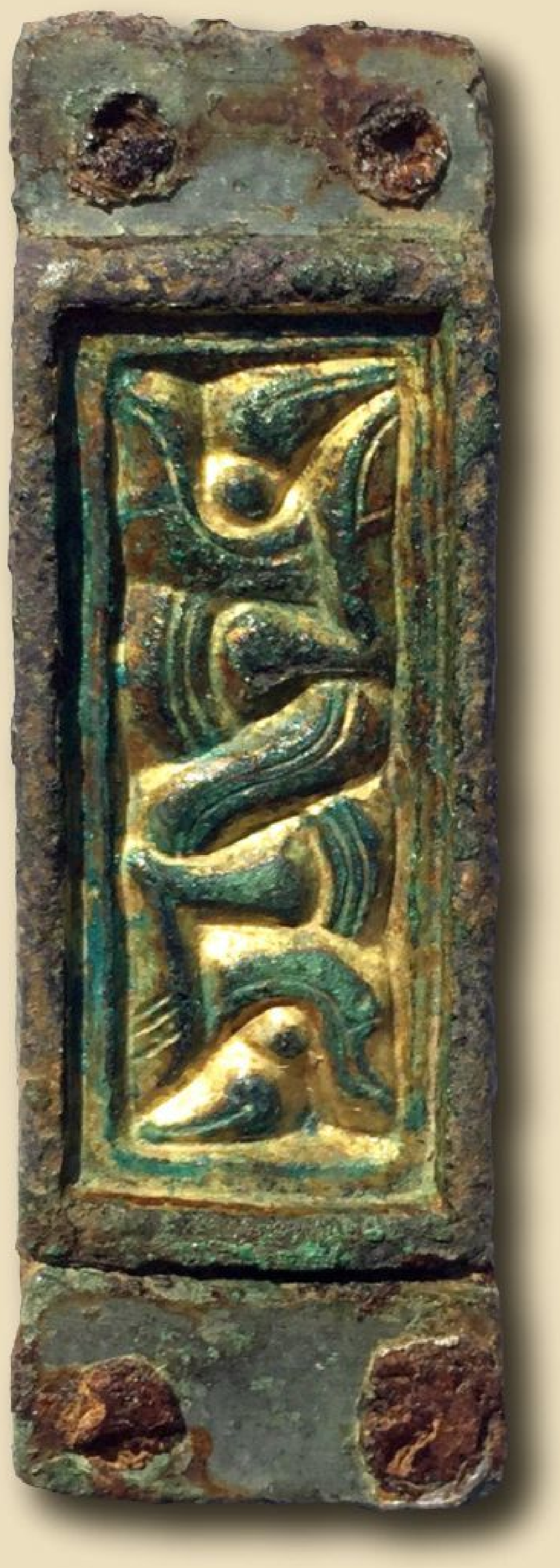
Selec
DANGER
Deep excavations

Right: "Buildings are most interesting when they're being made or destroyed. Get out there and stare at some building sites"

The Cunning Women of Anglo-Saxon Scremby

PORTABLE ANTIQUITIES SCHEME LIN-79D38D/LIN-7AC173 (BROOCHES), HUGH WILLMOTT/UNIVERSITY OF SHEFFIELD (OTHERS)

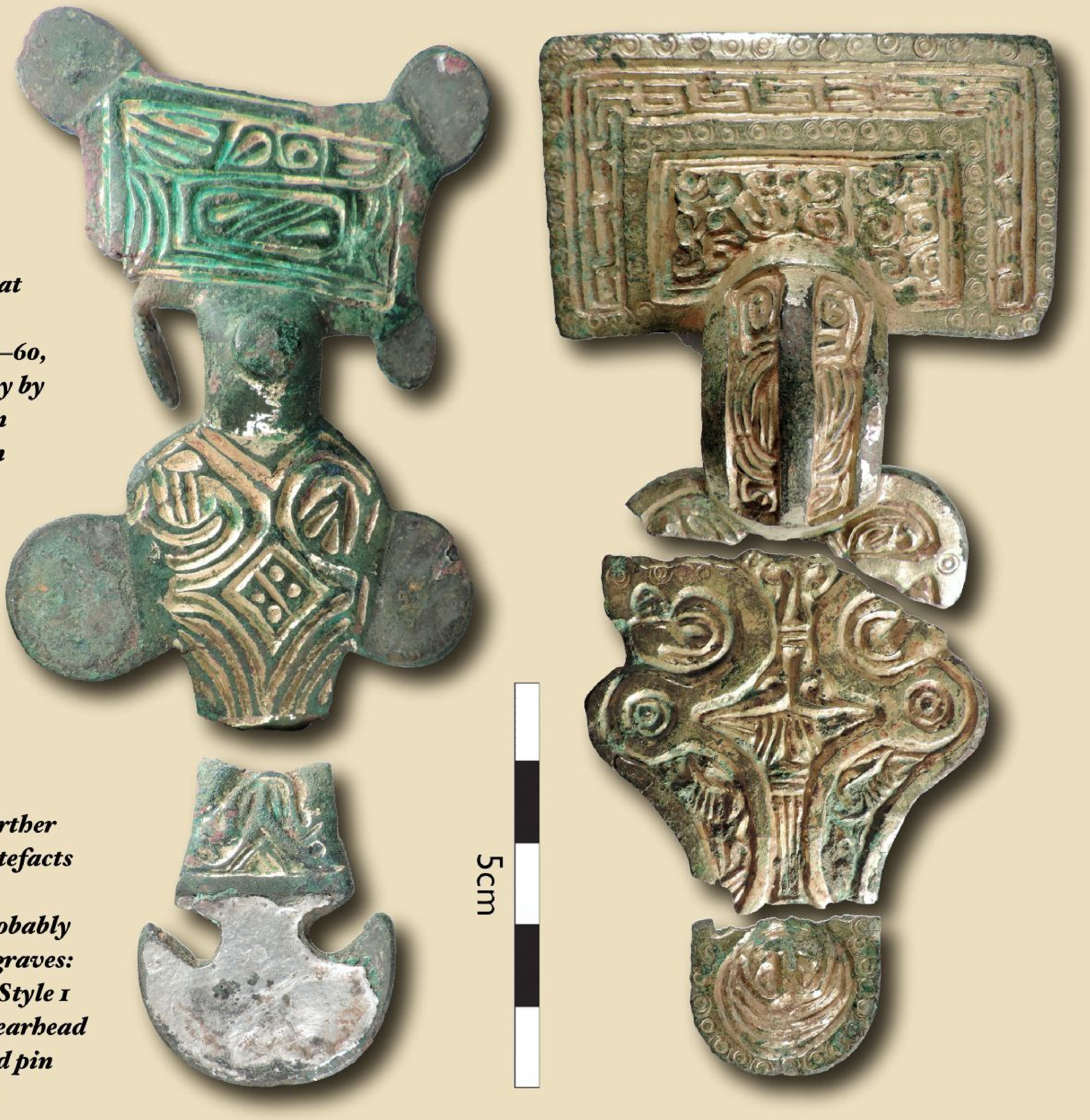




Anglo-Saxon cemeteries can be a key source of information about communities and settlements. But sometimes they have stories that are as curious in their own right. Lisa Brundle introduces such a cemetery in Lincolnshire, still under excavation

What do we know about early Anglo-Saxon Lincolnshire (AD410–700)? The answer is: very little. Early medieval documents recount the historic kingdom of Lindsey emerging in the seventh century, but we have limited understandings of what happened during the previous two centuries of post-Roman power vacuum in the region. With few excavated early Anglo-Saxon settlements, we often rely on burial archaeology to piece together a narrative about communities.

Right: Two gilt copper-alloy great square-headed brooches c AD525–60, found at Scremby by Damien Neale in 2017 detecting on cultivated land

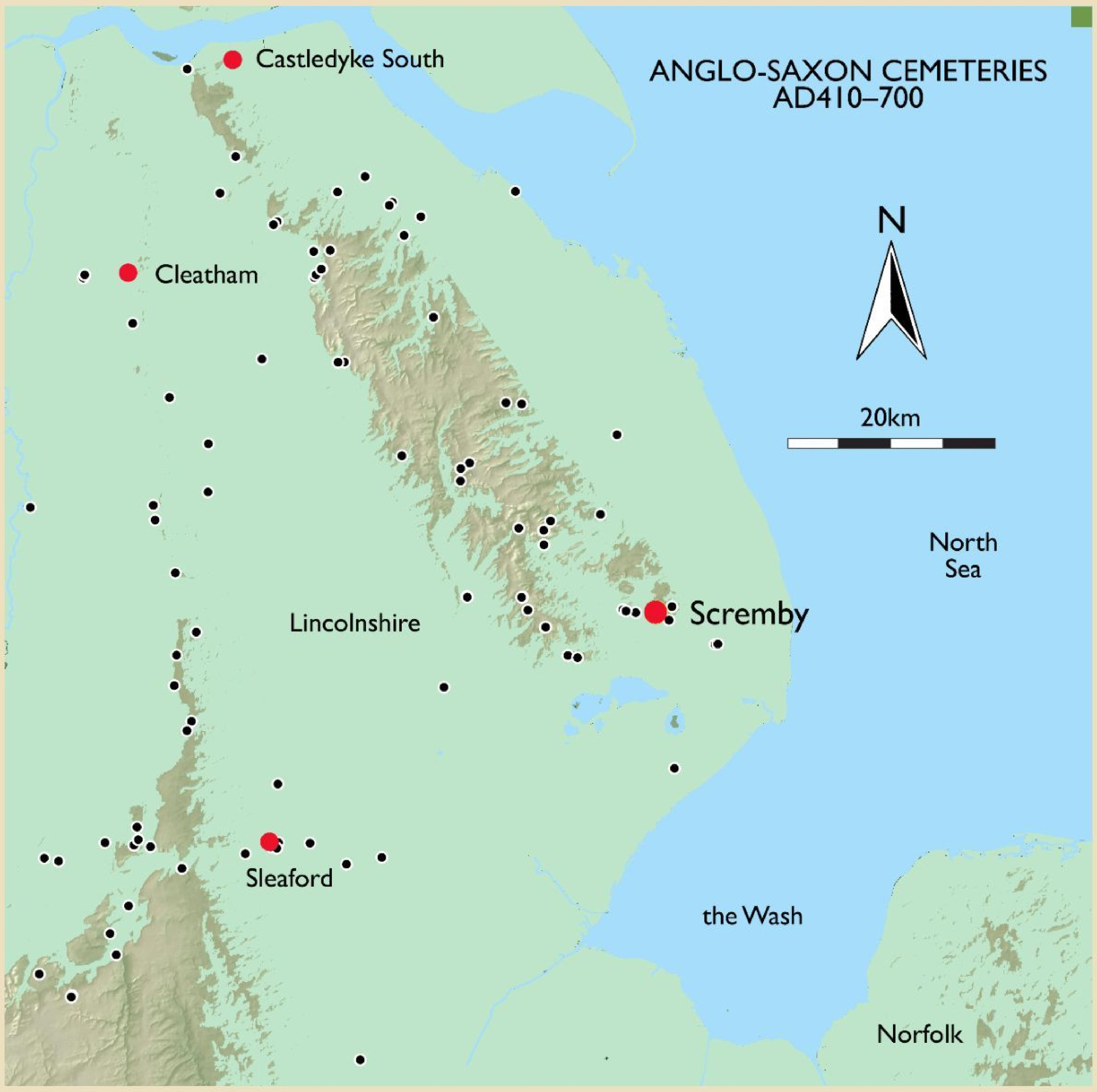


Top and left: Further Anglo-Saxon artefacts found by metal detecting, all probably from disturbed graves: a boar's head, a Style 1 belt mount, a spearhead and a brooch and pin set (not to scale)

Important recent studies including Kevin Leahy's *Anglo-Saxon Kingdom of Lindsey* (2007) and Caitlin Green's *Britons & Anglo-Saxons* (2012) have provided new insights, but our knowledge is hampered by the scarcity of modern excavations. Despite 81 known early Anglo-Saxon cemeteries in Lincolnshire, only one on the chalk wolds – Castledyke South – had been properly excavated.

The newly discovered site at Scremby is the first well-excavated cemetery since Castledyke (1998) and Cleatham (2007), and presents an exciting opportunity to closely investigate a previously unknown community who chose to bury their dead on a slope facing the Wash, overlooking East Anglia. Preliminary analysis is starting to reveal its secrets concerning burial behaviour, and how communities mediated social networks on the eve of the formation of Lindsey.

Right: Early Anglo-Saxon cemeteries in Lincolnshire; some are represented by scatters of artefacts dragged out of graves by cultivation



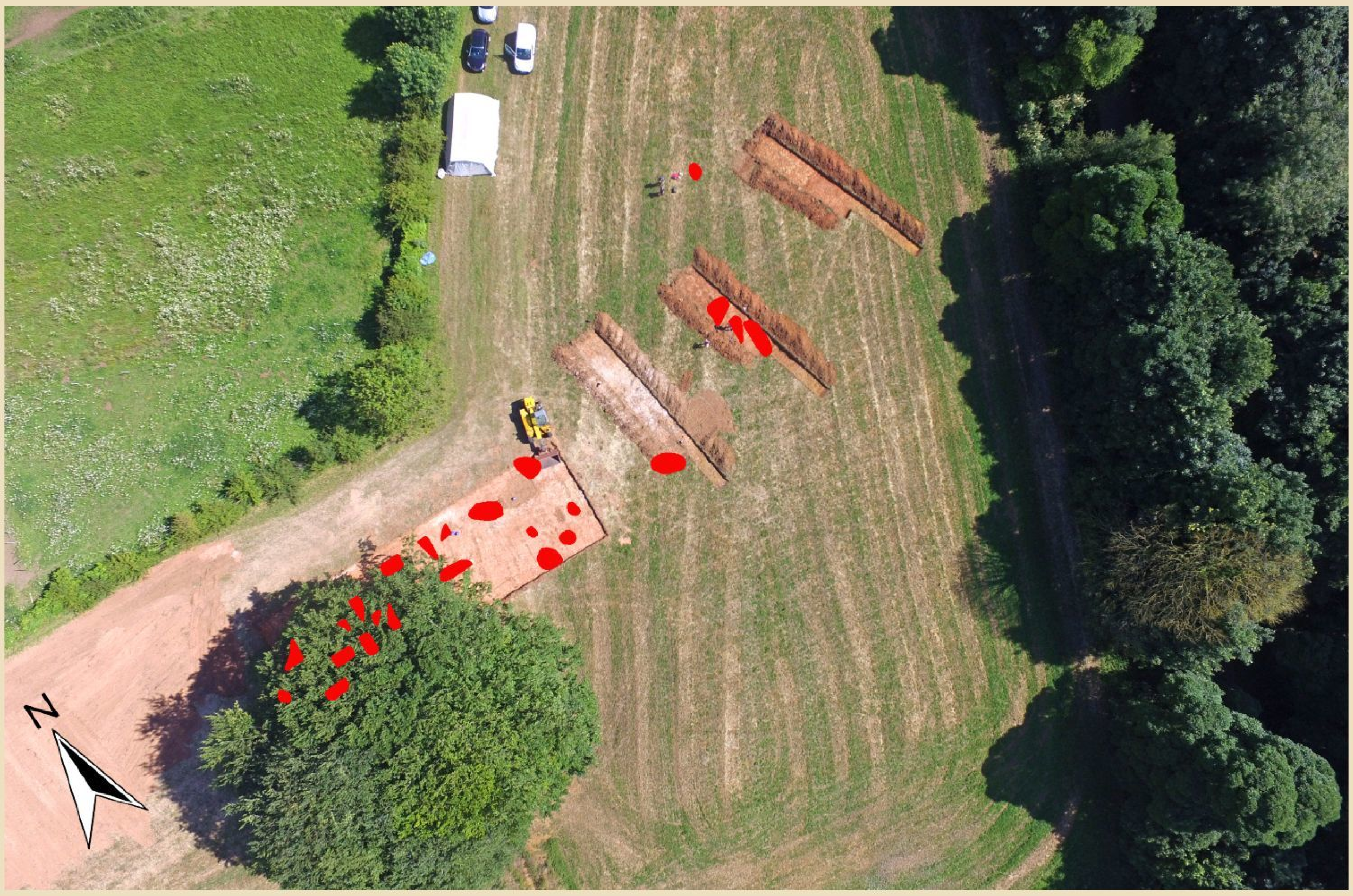
HUGH WILLMOTT/UNIVERSITY OF SHEFFIELD/CBA [2]

Chance discovery

Scremby is a picturesque, quiet hamlet which lies on the southern tip of the chalk wolds in the parish of Ashby with Scremby in the East Lindsey district of Lincolnshire. In 2017 a metal detectorist, Damien Neale, was searching cultivated private land with permission from the owner. The field was a virgin site – no known detecting had previously occurred, and it was not long before he found artefacts dating to the mid-fifth to sixth centuries. He reported his finds to Adam Daubney, the Lincolnshire finds liaison officer (FLO), and it was soon clear that the site warranted further investigation.

Archaeological fieldwork was arranged by Hugh Willmott at the University of Sheffield, in partnership with the Lincolnshire FLO. Excavations in 2017–18 revealed a total of 23 graves: they contained the remains of 24 individuals, with eight male adults, ten female adults, an infant and five juveniles aged between ten and 20, clustered near a barrow raised over an unfurnished male burial. Radiocarbon dates place this cemetery firmly between the end of Roman Britain and the eve of the conversion to Christianity, AD425–600.

Below: Sketch plan of main excavated features on an air view of the excavations in 2018, looking north-east



As excavation got underway it quickly became apparent that the cemetery contained a rich array of objects interred with well-dressed females. They were garbed in the "Anglian"-style costume with peplos garments, body-length tubes, fastened by pairs of annular brooches; many also had pins fastening an outer garment. Among other dress accessories were wrist clasps, securing the opening in a sleeve, and strings of beads hung around the neck and chest area. Additional grave goods included girdle-hangers and latch-lifters, both key-like possible emblems of female identity, and knives, chalk spindle whorls, a bone comb, a scutiform (shield-shaped) pendant and an animal-tooth pendant.

Not all of the women were buried with dress fasteners. The mortuary costume, for instance, of an adult female in Grave 20 included a necklet of six silver-sheet beads on a silver-wire loop, a silver mount or casing and a pair of copper-alloy tweezers suspended by an iron ring on the right side of the pelvis. Some dress accessories did not even form part of the mortuary costume; instead they were kept in a bag and placed on the body or loose in the grave during the closing of the burial. While men did not sport such a

HUGH WILLMOTT/UNIVERSITY OF SHEFFIELD (5)

Left: Opening a trench in 2018

rich variety of grave goods, there is some variation among the masculine graves at Scremby, including various combination sets of shields, spears, knives, a buckle, an urn and even "feminine" objects including a latch-lifter.

During the excavation, one grave in particular caused quite a stir: Grave 21, holding a female aged 17–25 laid out on her left side with her legs flexed to the left, her head carefully positioned to lean towards an infant cradled on her left arm. She wore an Anglian-style costume with brooches fastening a dress and cloak, and two pairs of wrist clasps. Festoons of beads around her neck, including a large crystal, draped over the infant. At the crook of her knee was an elephant-ivory ring presumed to have been around the mouth of a bag, which had contained a buckle, a latch-lifter and a single girdle-hanger. Girdle-hangers are often found within female graves of this age bracket, typically in pairs, forming part of a girdle group on the left hip or upper leg area with their terminals facing the feet. In Grave 21, however, the terminal of this single hanger faced upwards, pointing like a finger towards the heads of the adult and infant. This grave evokes an emotive response from a modern viewer, conjuring a mother protecting her child. Perhaps this was the desired effect. While it is difficult to pin down if they were in fact related or simply died at a similar time, we can safely conjecture that the buriers wished to communicate and recreate familial bonds.

Below: Excavating an enamelled copper-alloy bowl in 2019

Concealing and curating

We know very little about the events that surrounded funerals in early Anglo-Saxon England. We do know from excavations that bodies were carefully dressed for the mourning community to look at, before the graves were closed. Everything about the dead communicated something to the living, from the arrangement of jewellery, to the positioning of the body. Yet some objects were concealed from view, safely tucked under the body or clothing. Did these have particular significance or meaning? Or were they simply hidden because of the physical layout of the grave? Likewise, some graves contained old, curated objects – some perhaps 50 years old at the time of burial, and others several centuries. Careful analysis of these practices at Scremby gives us important insights into how the mourners wished to remember and commemorate the newly deceased.

Mnemonic strategies entailed highly conspicuous displays and the concealment of lavish grave goods. In Grave 17, for instance, a pair of silver spiral finger-rings were found under the right lower arm, hidden underneath a sleeve. This lady was well-dressed with fasteners and fittings and a necklace of bucket pendants underneath a festoon of beads with a central animal-tooth pendant. Objects on display include a chalk spindle whorl and a comb at her feet, and an ivory-ring bag at her left femur (thigh). Might the finger-rings

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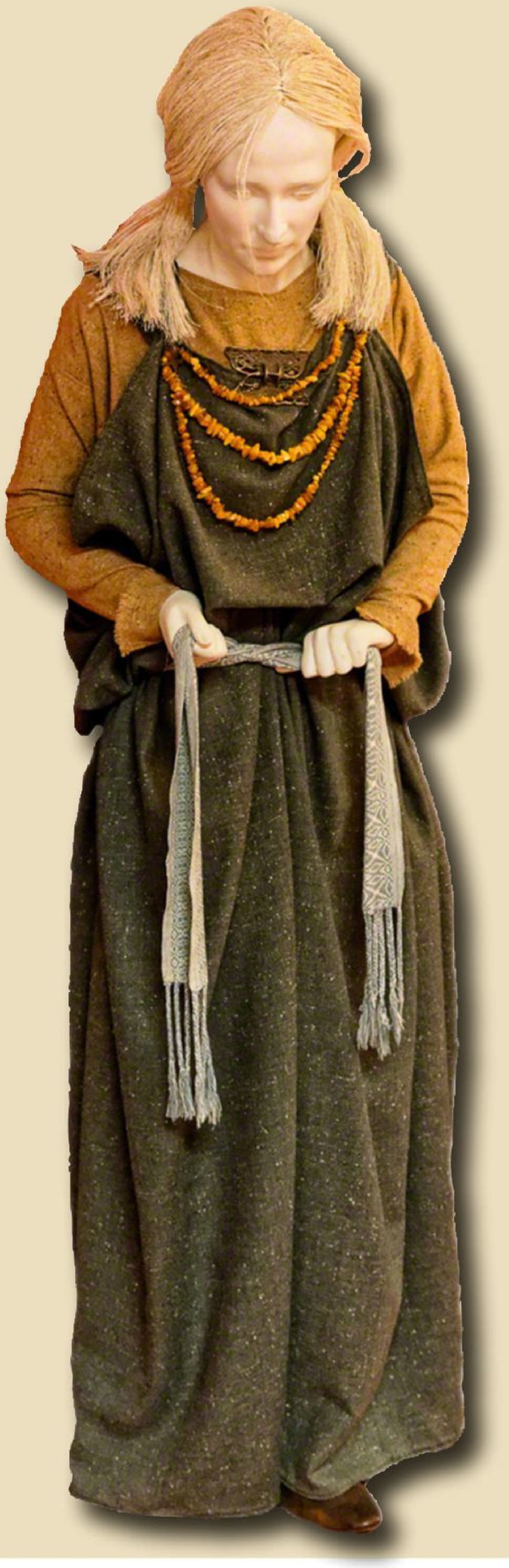
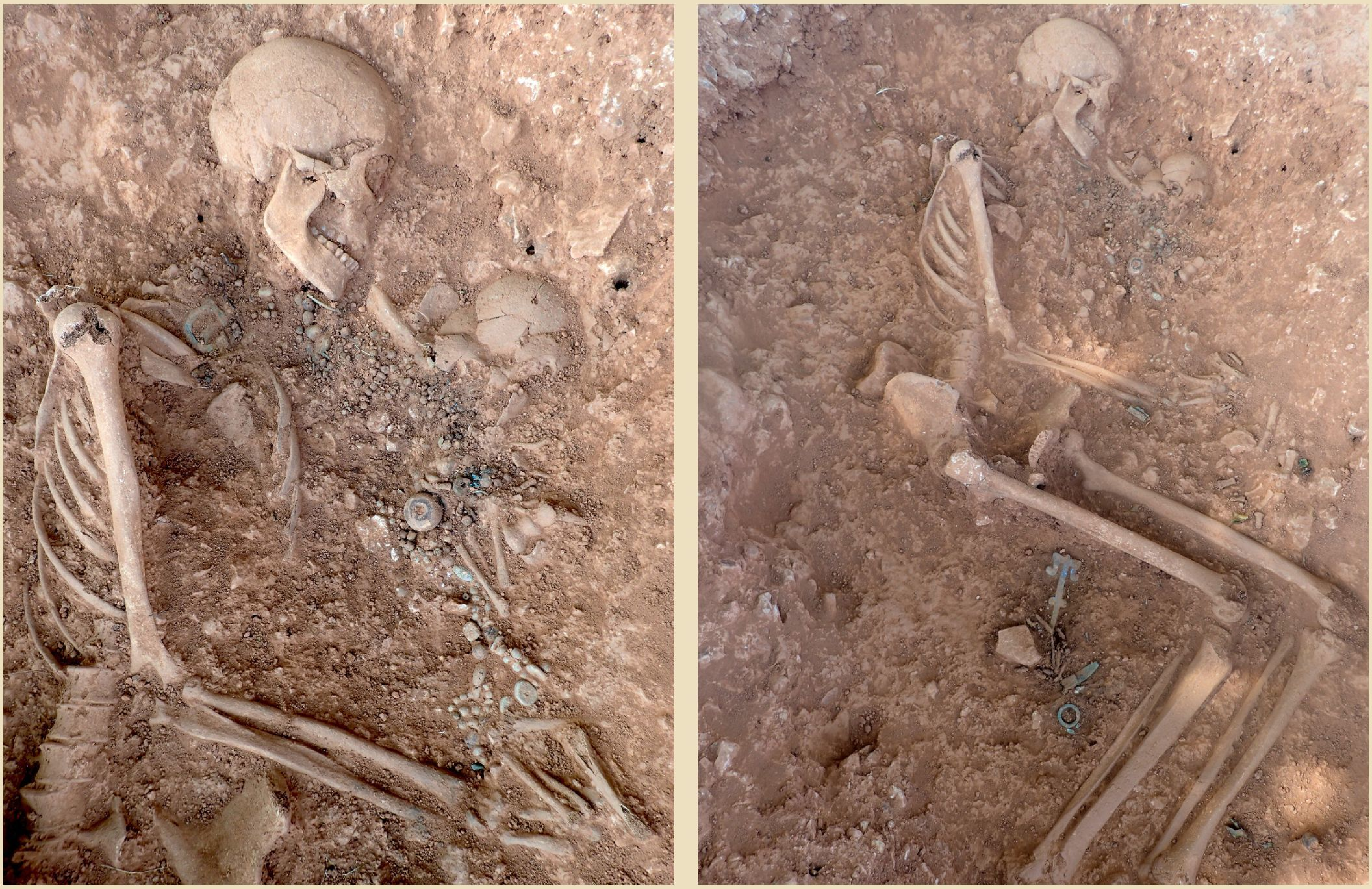


Right: A woman wearing a peplos modelled at the West Stow Anglo-Saxon Village



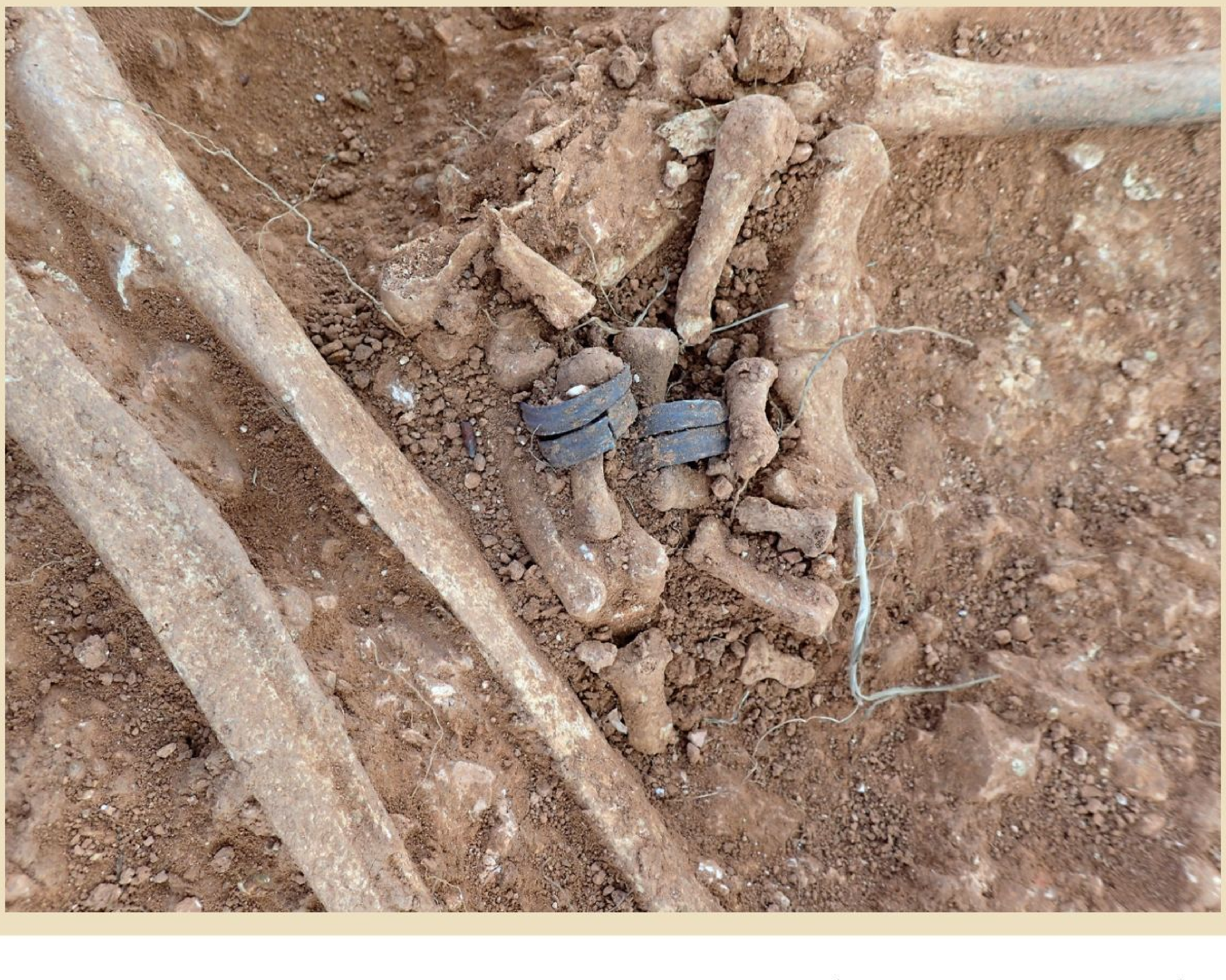
Above: Grave 21, a double burial with an adult female cradling an infant; on right note a group of objects buried in a bag in the crook of the woman's knee, and the single girdle-hanger pointing towards the two corpses's heads

and bucket pendants have been concealed in fear of grave robbing at a later date? This does not appear to be the case. A pair of silver spiral rings adorned the fingers of the female adult buried in Grave 12, clearly visible. Might this indicate that her mourners could only muster two rings for the burial, and carefully posed the body to show them off? Again this was not the case: Grave 12 has a similar grave assemblage to Grave 17, with only subtle differences – Grave 12 includes a pair of girdle-hangers and no bucket pendants.

Girdle-hangers, antique objects and even fire steels were also hidden. Grave 1, with a well-furnished ten–12-year-old female, demonstrates a careful layering and concealment of objects under the body and within layers of garments. The brooches and beads on her shoulders and chest area and the clasps on her wrists draw attention to her upper body, while other objects were concealed under her lower body. Underneath the pelvis on the left side was a Roman harness fitting; an iron fire-steel nearby was probably also placed under the body, as we found a pair of girdle-hangers partially underneath the fire-steel and the left femur.

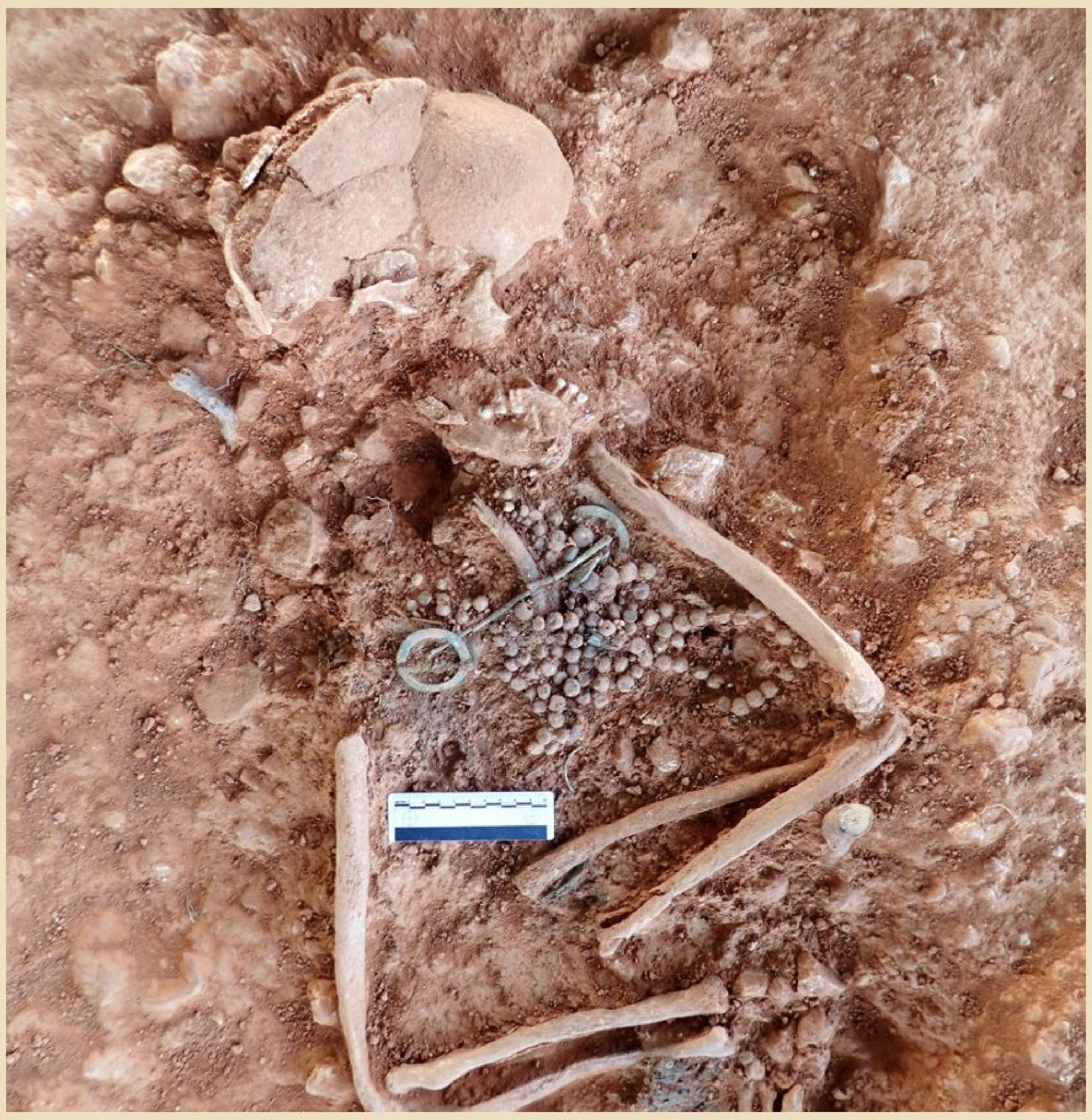
The single hanger in Grave 21 was also hidden, bundled in an ivory-ring bag. Yet, for two other adult females (Graves 2 and 12) their buriers ensured the girdle-hangers were clearly visible to those at the graveside, with the pieces hanging over the ivory-ring bag on their left upper leg. Interestingly, the concealed girdle-hangers in Grave 1 and Grave 21 are not completely whole. A terminal head of the pair in Grave 1 is missing and only a single hanger was in the bag in Grave 21. Was this simply a matter of careful positioning so that the fragmented state of the objects was not on display, or was there some kind of symbolic language behind the concealment of girdle-hangers and other objects?

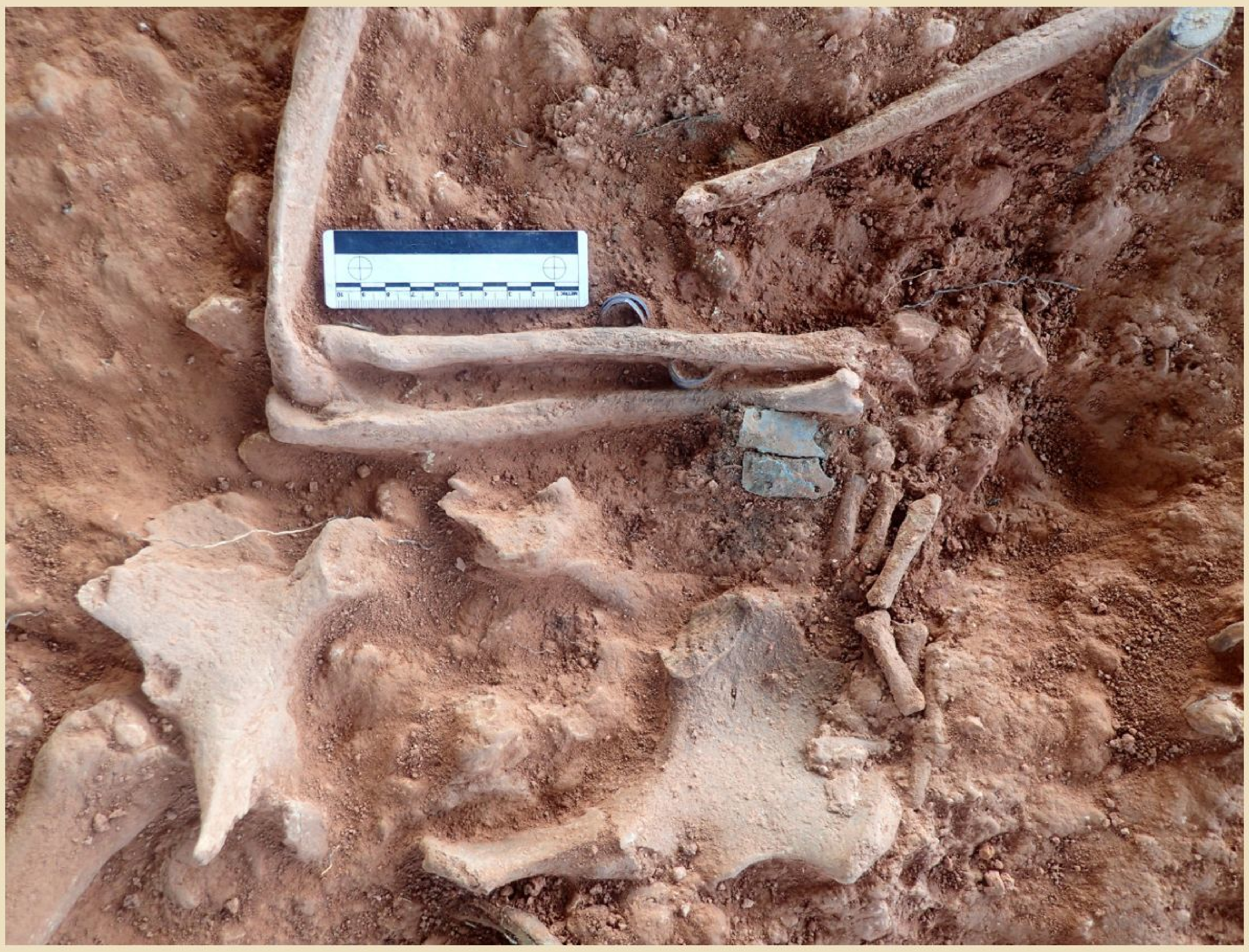
Similar concealing behaviour was also appropriate for males. Notably, in Grave 15 a shield with a crouching bird-of-prey mount was placed underneath the upper part of the body, which was



Right: A pair of silver spiral rings wrapped around the hand of an adult female in Grave 12

HUGH WILLMOTT/UNIVERSITY OF SHEFFIELD [8]





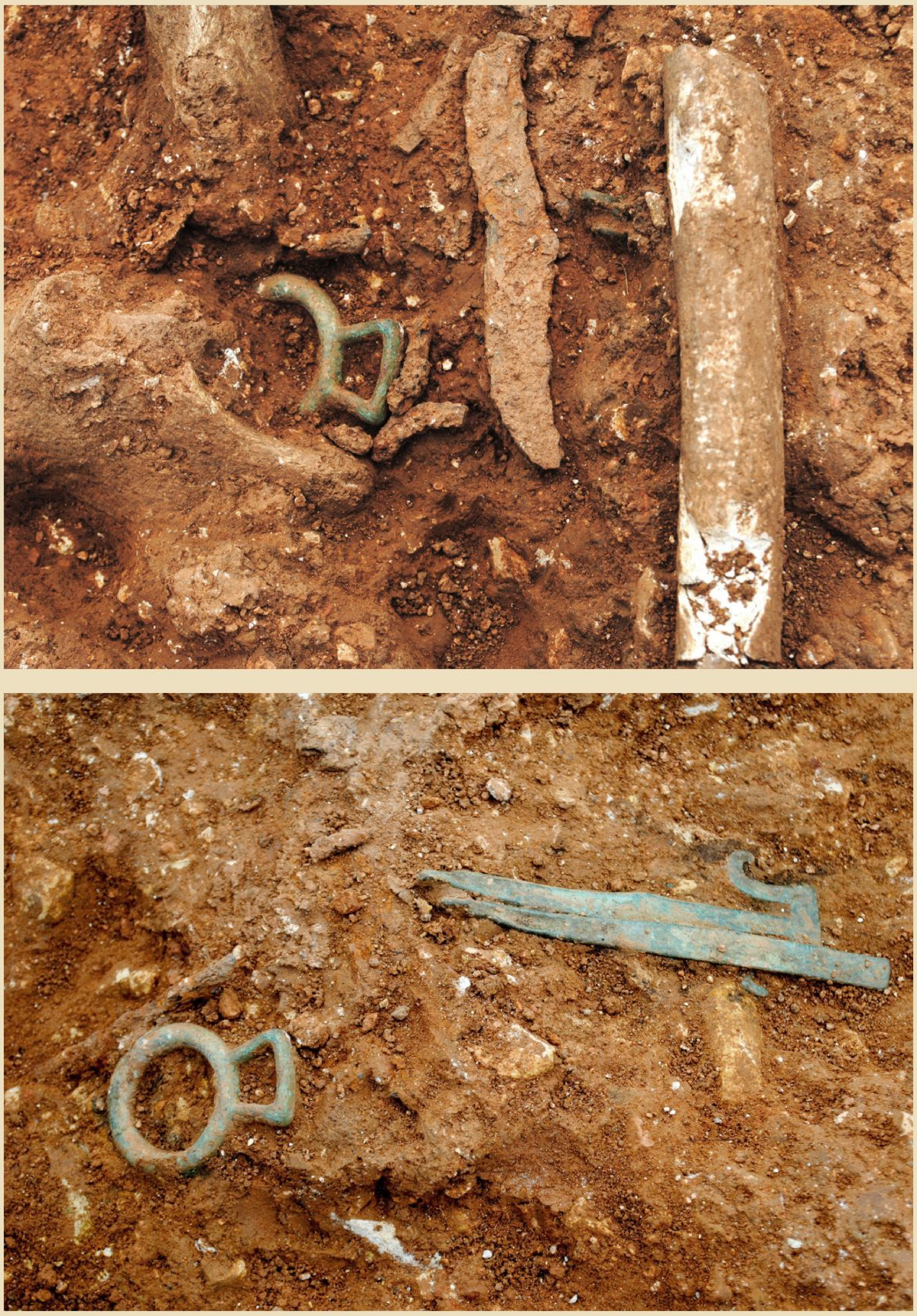
laid out on top of the reversed shield. This type of shield ornamentation is incredibly rare and, oddly, the ornamentation was hidden from view. Other shields without ornate decoration were positioned in the typical Anglian position – on the chest and head area, covering their faces (Graves 11 and 14). It is extremely rare to find shields under the body – the nearby cemetery at Sleaford demonstrates a similar practice, perhaps implying an intercommunity burial behaviour. Other weapon graves include Grave 6, which contained a spear. It had been laid on the chest area

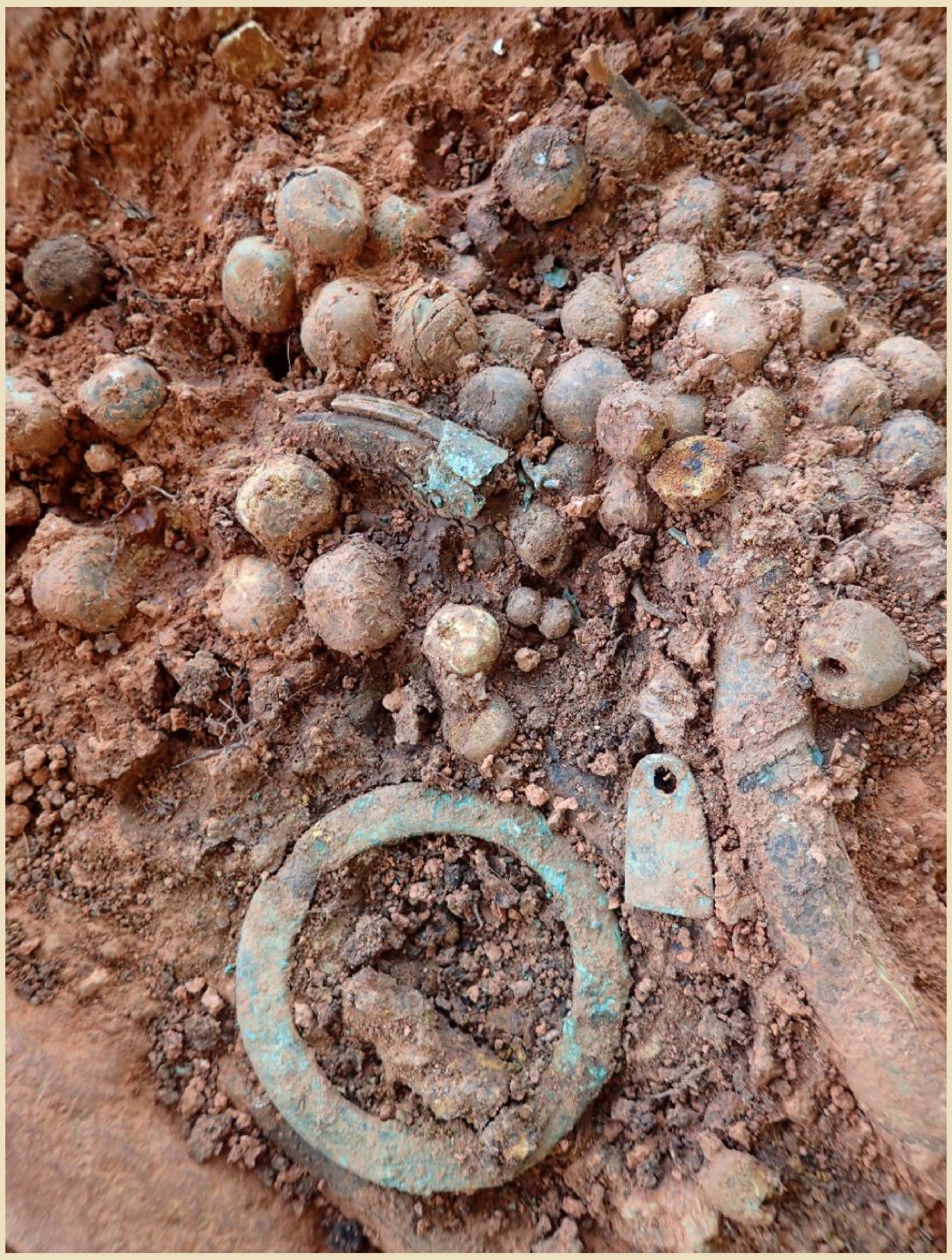
***Above:* Grave 17, a female adult adorned with a pair of copper-alloy annular brooches and a pin which would have fastened a dress and outer garment; copper-alloy staining and remains of wrist clasps can be seen at the wrist area**

***Below:* Detail of chest/neck area in Grave 17, with an animal-tooth pendant among a festoon of beads**

***Above:* Silver spiral finger-rings in Grave 17, under the right sleeve and wrist clasps at the wrist area indicating that she was wearing a long-sleeved garment**

***Below:* Grave 1 grave goods; note harness fitting and fire-steel (top), and girdle-hangers appearing after the steel and leg bone are lifted (bottom)**



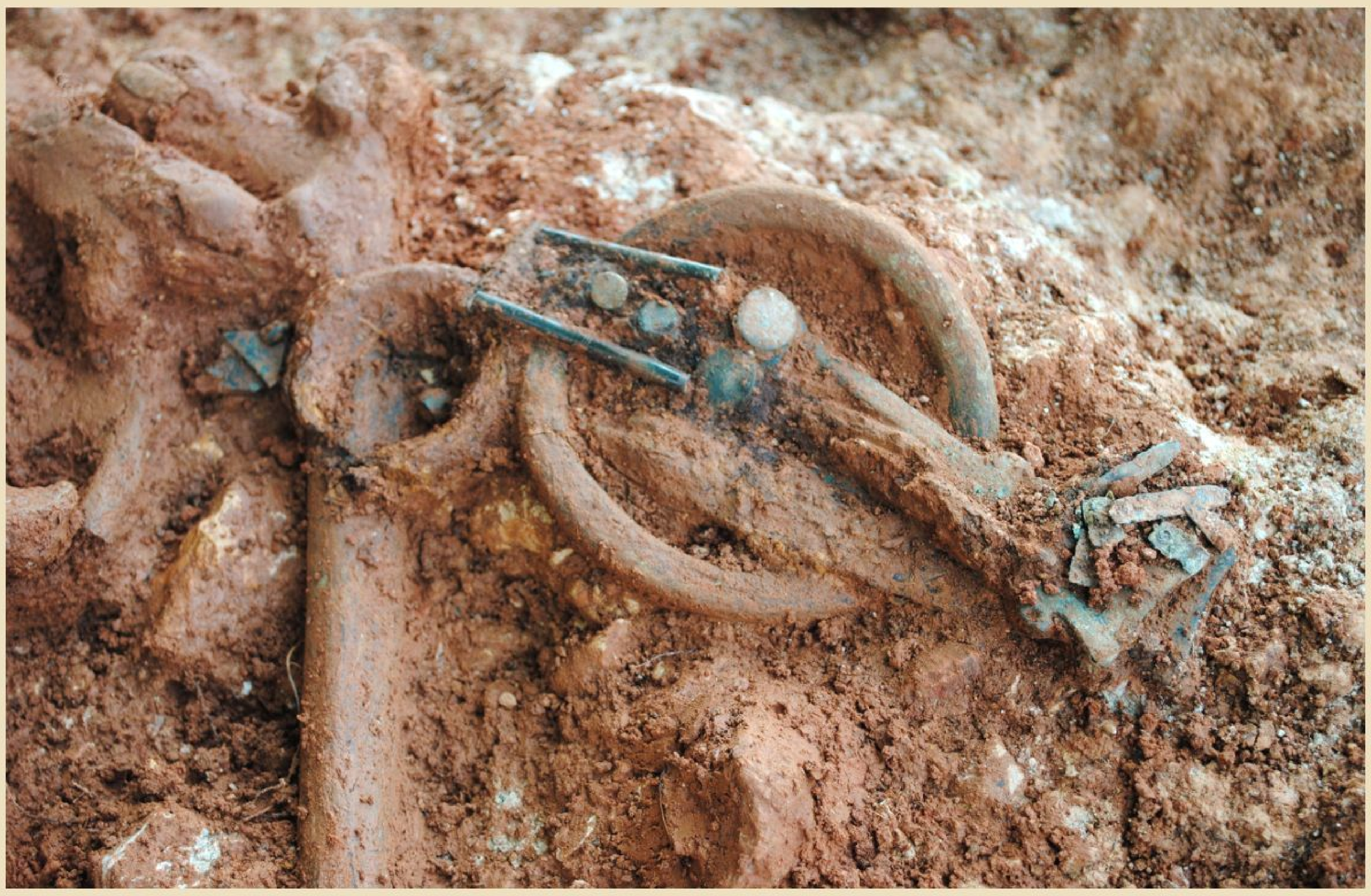


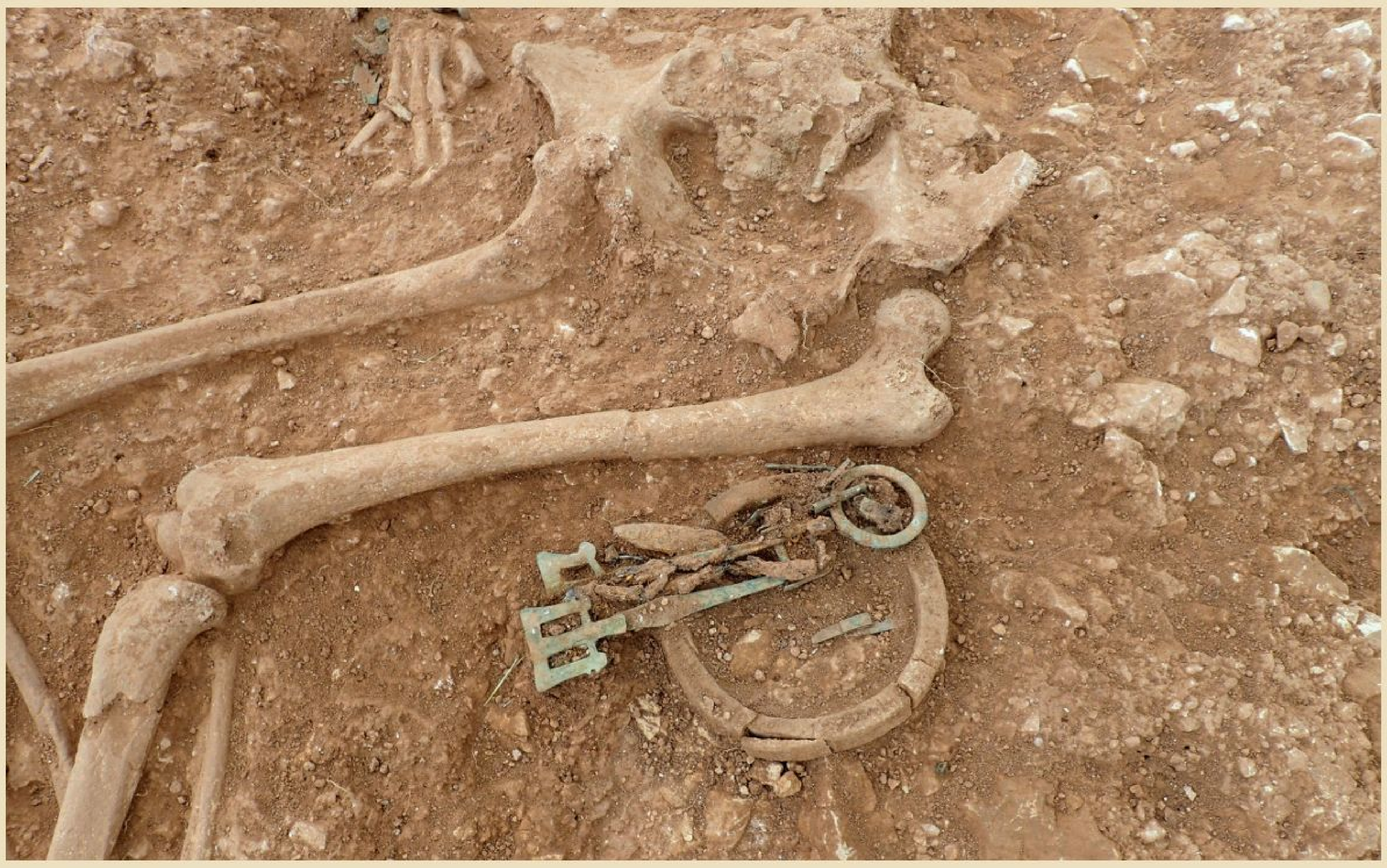
after the grave was partially filled: was it an afterthought during the closing of the grave? However, in Grave 20 (with an adult female) a well-worn single copper-alloy annular brooch was found in the grave fill immediately above the woman's jaw. This provokes multiple questions. Might the worn condition of the object and its placement imply that it had been curated and "gifted" during the grave closure? Why were some rare or unusual items concealed under the body? Did all those present at the funeral view the concealment of items, or were only a few select individuals privy to such acts?

Healing and divining

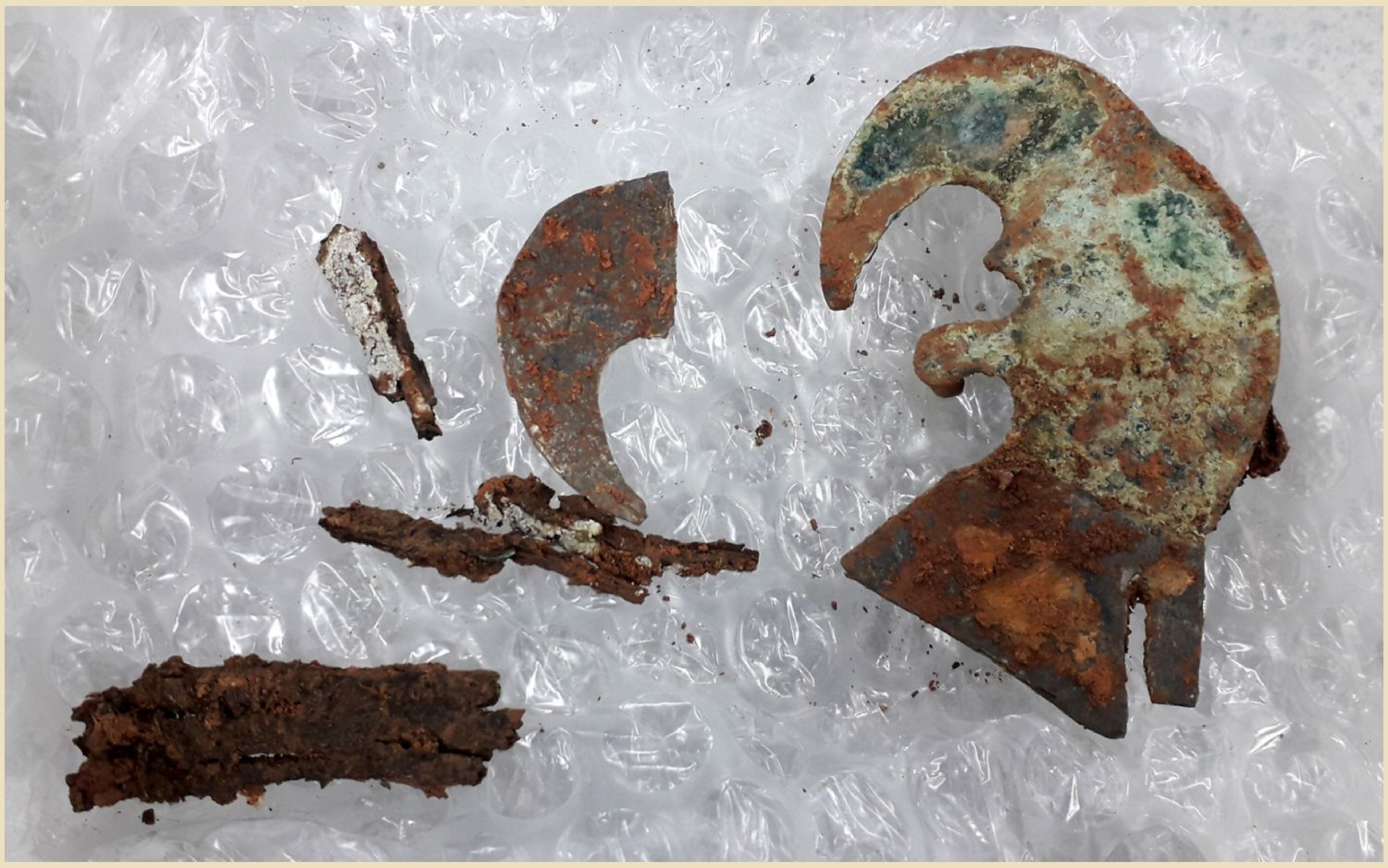
Females buried with bags and workboxes containing small fragments, and who wore objects like bucket pendants and girdle-hangers, are closely associated with "cunning women" (as defined by Audrey Meaney and Tania Dickinson) – specialists involved in healing, divining and the supernatural within families and communities. Markedly, there is an unusually high number of women buried at Scremby with girdle-hangers, ivory-ring bags and bags containing small material fragments. Three graves demonstrate burial with bucket pendants (Graves 2, 7 and 17). Grave 17 was particularly notable – furnished with beads, a chalk spindle whorl, a bone comb and an ivory-ring bag containing an iron rod some 10cm long. Grave 12 also had an ivory-ring bag, containing small amulet objects including a mount with repoussé decoration, a knife and, like Grave 17, an iron rod (12cm long) and a pair of girdle-hangers dangling over the mouth of the bag. Grave 1, with the ten–12-year-old, is well-furnished with a necklace of hundreds of beads, dress fasteners and fittings, a fire-steel, Roman antiques and a pair of girdle-hangers. Although well-furnished ten-year-olds are quite rare, they might have been perceived as adults. For this time period, females were furnished with dress fittings from this age, corresponding with the biological ability to give birth.

Was ten or 12 years enough time for an individual to obtain the correct knowledge and skill sets of a specialist? Perhaps the concealment of the girdle-hanger and its fragmented state refer to an inherited status of healer and caregiver of children, who died too young to fulfil her specialist role. Latch-lifters are another type of pendant object, again perhaps symbolising a key. Generally these are found in female burials, but here at Scremby a single male grave contained a complete example (Grave 13) – other grave goods included a shield. This individual demonstrates an unusual, and for this cemetery unique, bodily posture – his legs were tightly flexed to the right so that his lower legs were under his bottom with his feet together. The gentleman in Grave 13 also seems to





Right: Grave 2 (top) and Grave 12 (bottom), with exposed girdle-hangers lying across the opening of an elephant ivory-ring bag at the left hip area



Below: A bird-of-prey mount which ornamented a shield found beneath a male adult buried in Grave 15

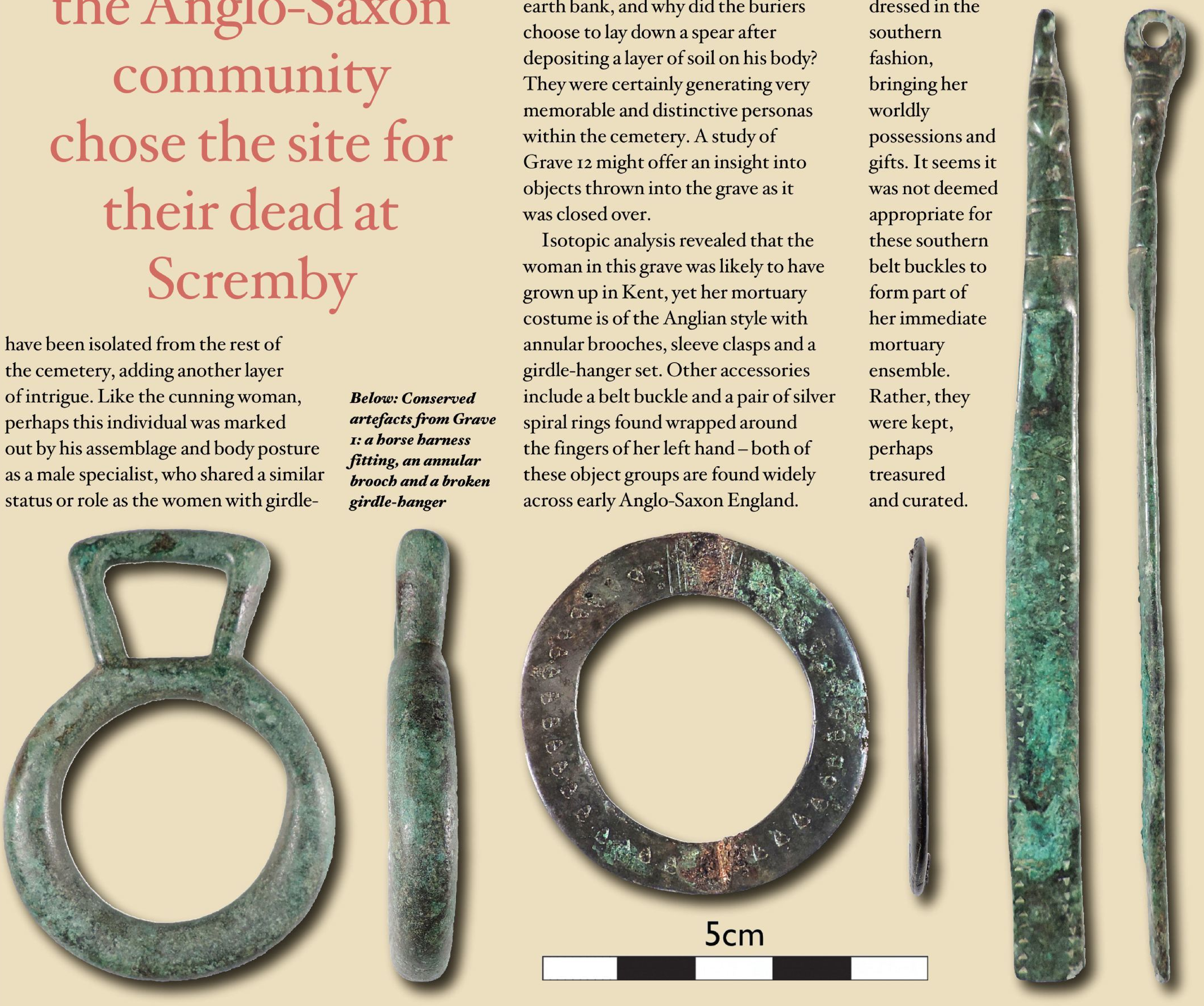
PORTABLE ANTIQUITIES SCHEME [3]

> It is not difficult to imagine why the Anglo-Saxon community chose the site for their dead at Scremby

have been isolated from the rest of the cemetery, adding another layer of intrigue. Like the cunning woman, perhaps this individual was marked out by his assemblage and body posture as a male specialist, who shared a similar status or role as the women with girdle-hangers and amulets, and whose distinctive grave was also set apart by its isolation.

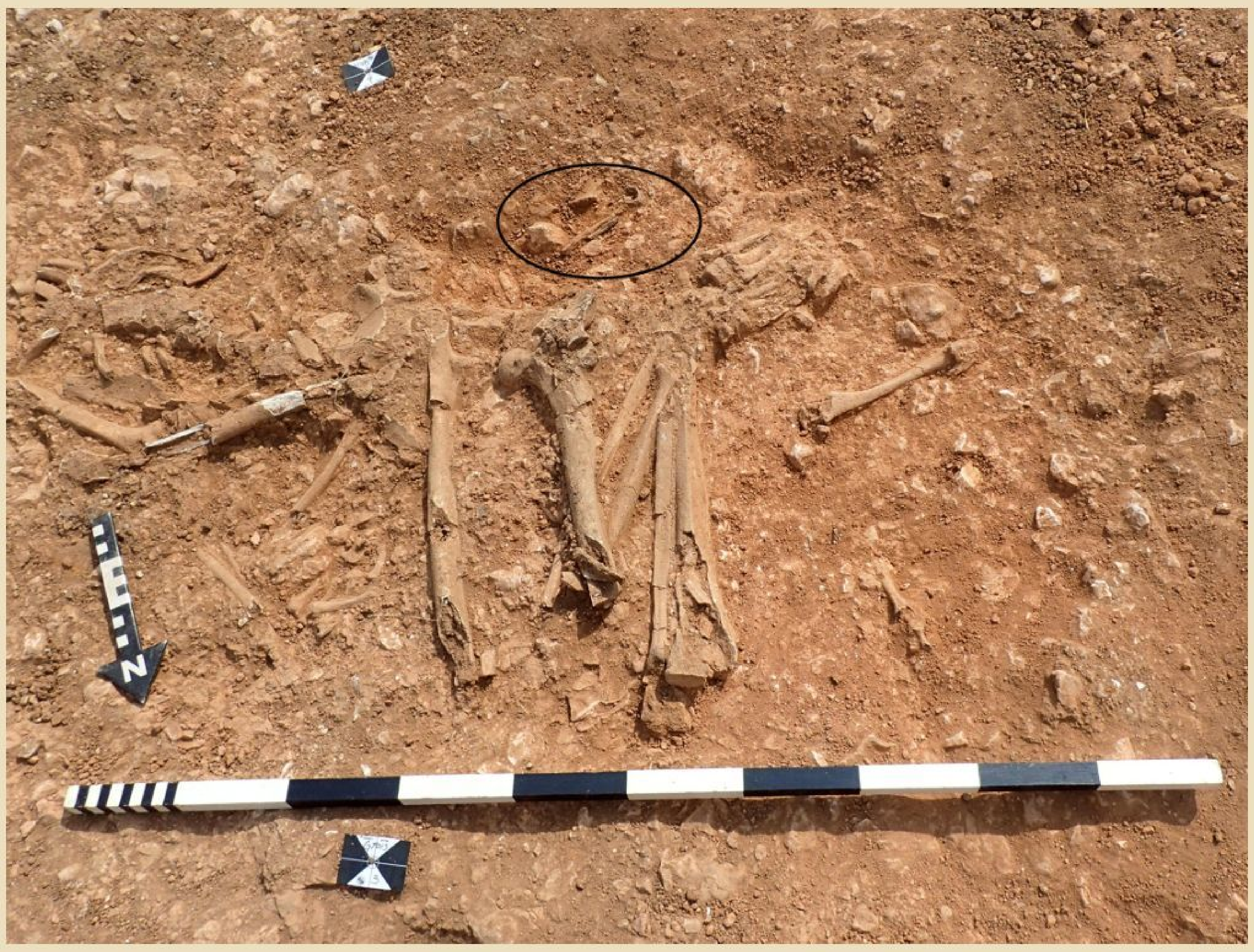
There are many oddities at Scremby: why was the gentleman in Grave 6 buried with his knee raised up on an earth bank, and why did the buriers choose to lay down a spear after depositing a layer of soil on his body? They were certainly generating very memorable and distinctive personas within the cemetery. A study of Grave 12 might offer an insight into objects thrown into the grave as it was closed over.

Isotopic analysis revealed that the woman in this grave was likely to have grown up in Kent, yet her mortuary costume is of the Anglian style with annular brooches, sleeve clasps and a girdle-hanger set. Other accessories include a belt buckle and a pair of silver spiral rings found wrapped around the fingers of her left hand – both of these object groups are found widely across early Anglo-Saxon England. Interestingly, a belt buckle and a buckle fragment, both of Type 1.6a, were found in the grave's upper fill; this type has a south coast distribution. It seems that this Kentish lady traversed the landscape and coastline, perhaps dressed in the southern fashion, bringing her worldly possessions and gifts. It seems it was not deemed appropriate for these southern belt buckles to form part of her immediate mortuary ensemble. Rather, they were kept, perhaps treasured and curated.



Below: Conserved artefacts from Grave 1: a horse harness fitting, an annular brooch and a broken girdle-hanger

HUGH WILLMOTT/UNIVERSITY OF SHEFFIELD [4]



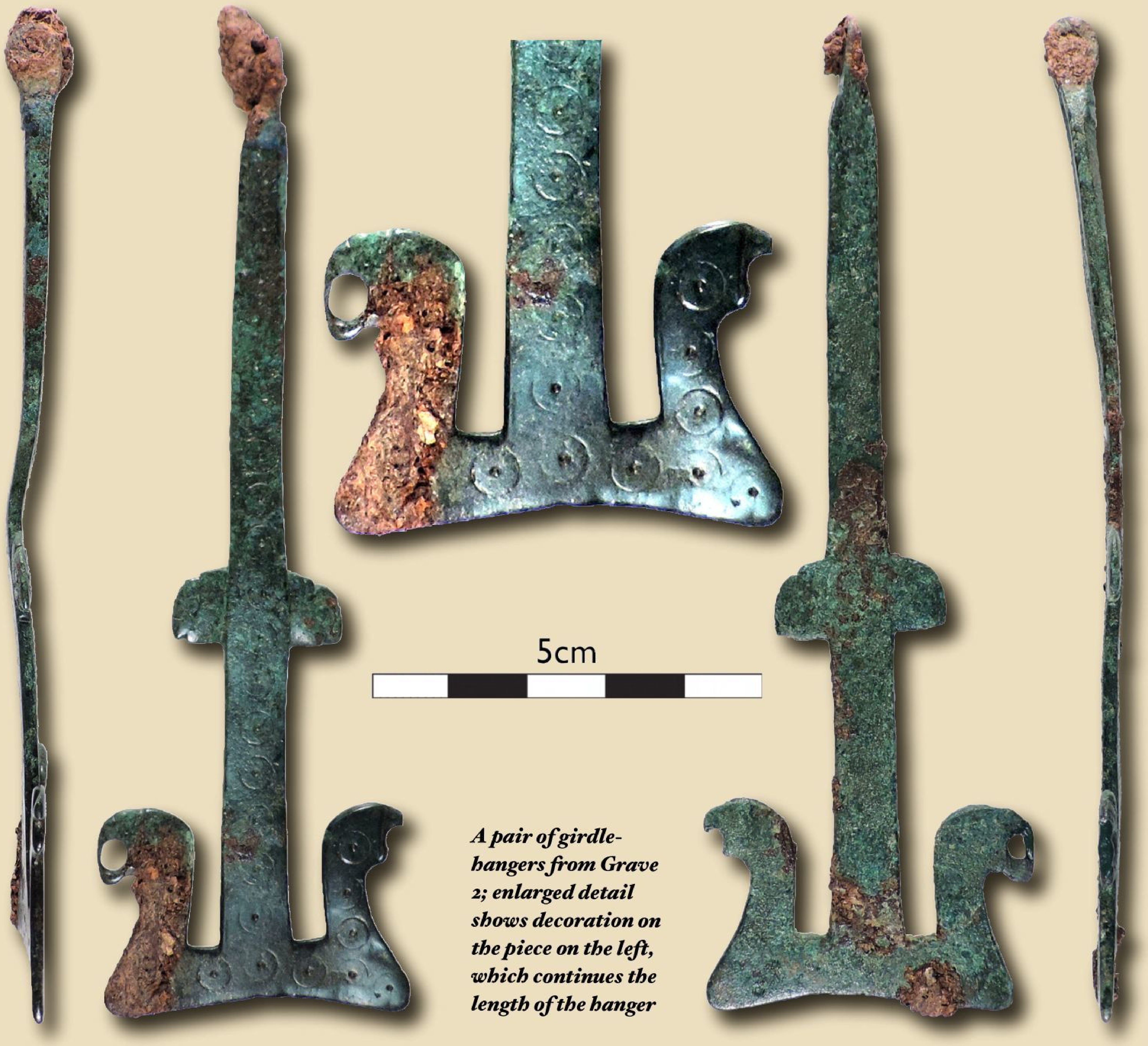
Left and below: A male adult in Grave 13, with a shield and latchlifter (ringed in larger view) positioned on the left side of the grave near the pelvis area (large scale 1m)

Perhaps the later additions of a spear in Grave 6, a brooch in Grave 20 and the buckles in Grave 12 added another layer of drama during the funeral.

Emotive landscapes

It is not difficult to imagine why the Anglo-Saxon community chose the site for their dead at Scremby. The cemetery is on the crest of the south-eastern tip of the Lincolnshire Wolds, commanding extensive vistas over the northern Fens to the south, and across the Lymn Valley to the south-west. Beyond the valley, the view takes in the eastern edge of the southern wolds as it rises up towards Raithby and Hagworthingham. Mourners could gaze across the Wash towards Norfolk, and over to neighbouring communities at Sleaford.

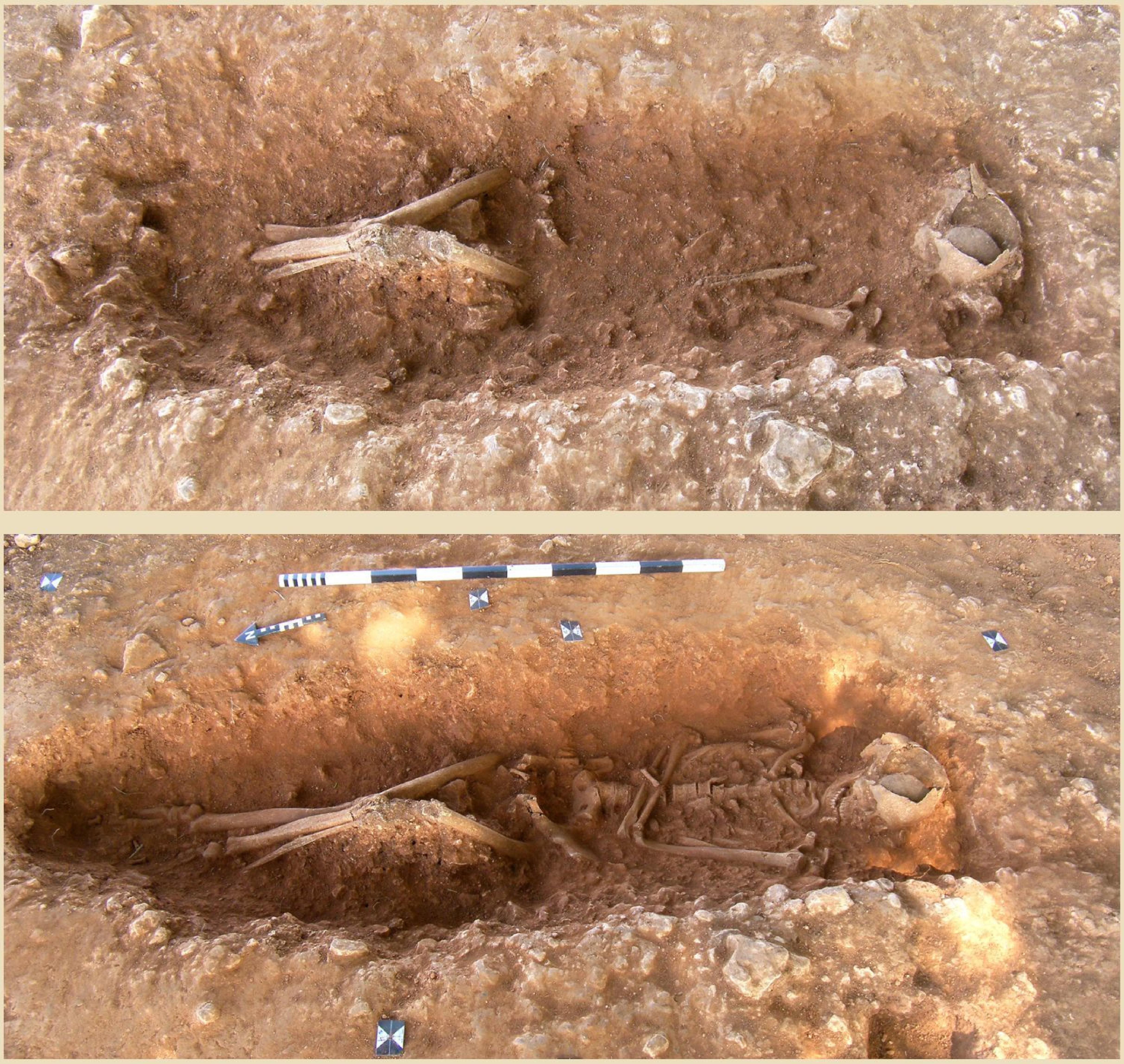
Interestingly, the type of girdle-hangers in Graves 1, 2 and 21 are generally clustered around the fringes of the Fens in East Anglia. Might this shared girdle-hanger type reflect an inter-cultural zone? It is possible that the location – close to the Wash – enabled access to East Anglia, perhaps on small dug-out wooden boats. Yet, the burial practices at Scremby share similar peculiarities with Sleaford (such as throwing in objects after the grave had been partially filled). It seems that the community at Scremby networked at a local and inter-regional scale with visitors from at least as far as the south coast. They shared cultural connections with East Anglia, and were intimately linked with the neighbouring community at Sleaford. It is perhaps then no wonder that the community at Scremby wished to invest in their dead, creating memorable, emotive mortuary topographies.



A pair of girdle-hangers from Grave 2; enlarged detail shows decoration on the piece on the left, which continues the length of the hanger

PORTABLE ANTIQUITIES SCHEME

Below: Grave 6, male adult with his knee raised on an earth bank and a spear thrown in during the closing of the grave



Excavation continues in 2019 with four weeks of digging. We hope to find the western limit of the burial ground, and to uncover the chronological relationship between the unfurnished male barrow burial and the surrounding flat graves.

Lisa Brundle is the author of Image & Performance, Agency & Ideology: Representations of the Human Figure in Funerary Contexts in Anglo-Saxon Art, AD 400–680 *(2019). She is currently Lincolnshire finds liaison officer, writing up the Scremby cemetery report with Adam Daubney and Hugh Wilmott* ■

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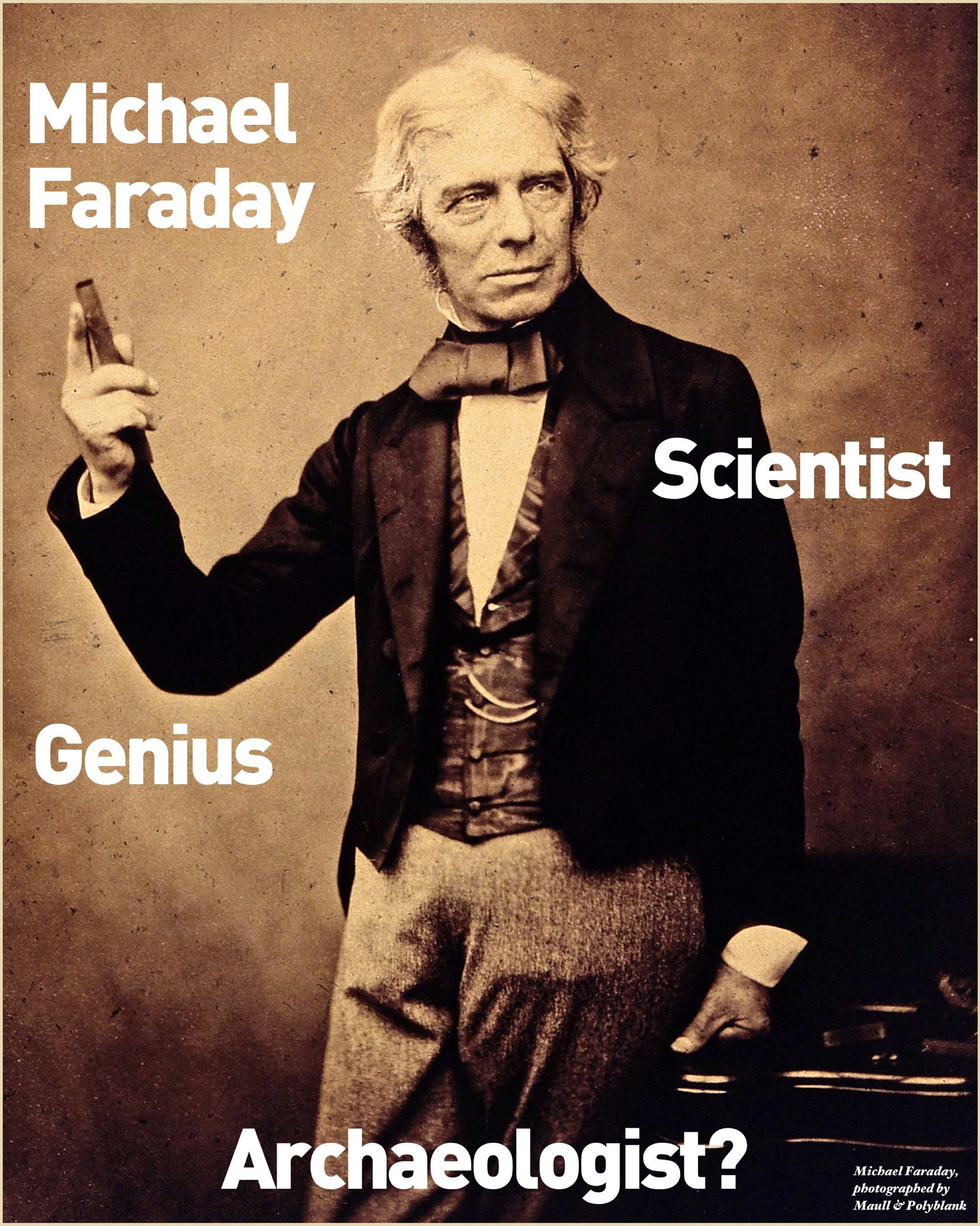
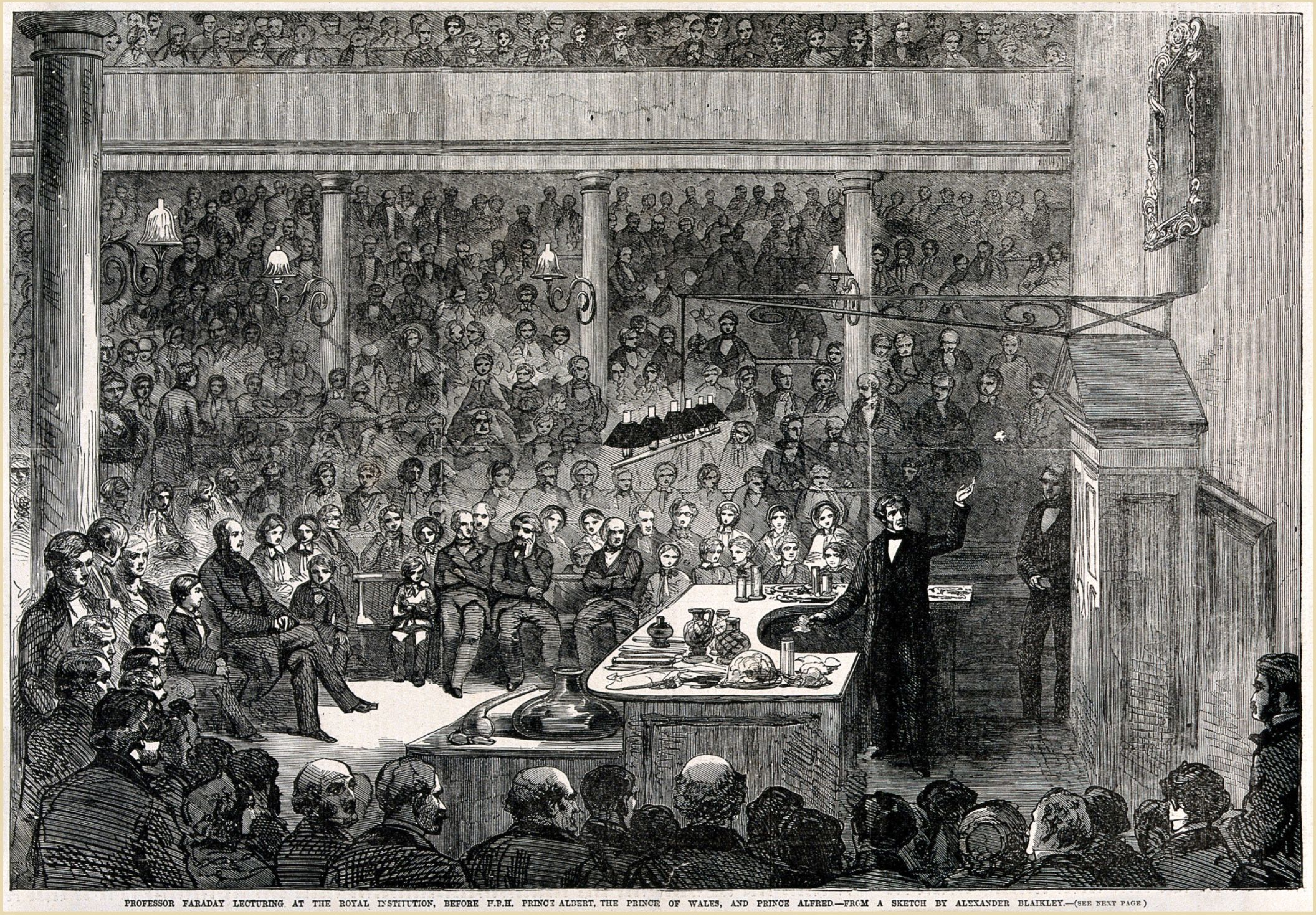
Michael Faraday Scientist Genius Archaeologist?



Michael Faraday, photographed by Maull & Polyblank

We think of science as part of what make archaeology modern. But as Gabriel Moshenska explains, early antiquarians also knew the value of technical analysis

Michael Faraday is one of the most famous scientists of all time, renowned for his discoveries and inventions in electromagnetism and chemistry. A man of modest origins and deep religious faith, he dazzled Victorian London with public demonstrations of his scientific discoveries at the Royal Institution. Faraday's contributions to science and technology are well known, but his achievements in archaeological chemistry have passed relatively unnoticed. While many of us think of archaeological science as a modern invention, the study of ancient artefacts is as old as alchemy. Faraday's chemical studies of artefacts in the 1830s and 40s, from Roman ceramics to Egyptian mummies, included what is probably the first scientific analysis to be published as part of an excavation report.


PROFESSOR FARADAY LECTURING AT THE ROYAL INSTITUTION, BEFORE H.R.H. PRINCE ALBERT, THE PRINCE OF WALES, AND PRINCE ALFRED.—FROM A SKETCH BY ALEXANDER BLAIKLEY.—(SEE NEXT PAGE.)

Above: Faraday lecturing at the Royal Institution, before Prince Albert and Prince Alfred, from a sketch by Alexander Blaikley

Antiquity & chemistry

In the history of modern science and technology, Michael Faraday (1791–1867) is a titanic figure. His work on electromagnetism led to the electric motor and generator; as a chemist he pioneered studies of electrolysis and the liquefaction of gasses. His discoveries, his passion for public engagement, and his systematic approach to experimentation have brought him enduring fame. Alongside his public reputation he has long been honoured by his fellow scientists: Albert Einstein famously hung a portrait of Faraday on his office wall.

As professor of chemistry at the Royal Institution, Faraday conducted consultancy work for government and industry. He advised on the construction of lighthouses, mine safety, public sanitation, and air and water pollution. He still found time for ground-breaking experiments, sensational public lectures, and analytical work for friends and scientific colleagues. As an intelligent, cultured man, Faraday was drawn to the study of archaeology and the ancient world. This fascination can be seen in his letters, notebooks and publications, from his youthful travels to the peak of his fame. Over the course of his career he returned again and again to the scientific study of archaeological materials.

Faraday was not the first scientist to be associated with archaeology. Archaeological chemists Earle Caley and Mark Pollard have traced this history back to the 18th century and the Age of Enlightenment. France and Germany were strongholds of science during this period, and many of the pioneers were also interested in antiquities. German chemist Martin Heinrich Klaproth (1743–1817) is best known as the discoverer of uranium, but like French chemist Michel Jean Jérôme Dizé (1764–1852) he also analysed ancient Greek and Roman coins and other materials. Most of the chemical studies of ancient artefacts in this period were focused on metals, and in particular the analysis of copper-alloy objects to discover their components such as tin, zinc and arsenic.

Even Faraday's mentor Humphry Davy (1778–1829) dabbled in archaeological science. Davy's particular interest was in ancient pigments: he collected samples from frescoes in Pompeii, Herculaneum and Rome, and from traces found in ancient storage

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jars. Davy compared his findings to accounts of pigment-making in works of Pliny, Vitruvius and Theophrastus. He later compared his Roman materials with pigments found in the ruins of the Romano-British villa at Bignor in West Sussex (see features Feb 2000/51 and Sep/Oct 2015/144).

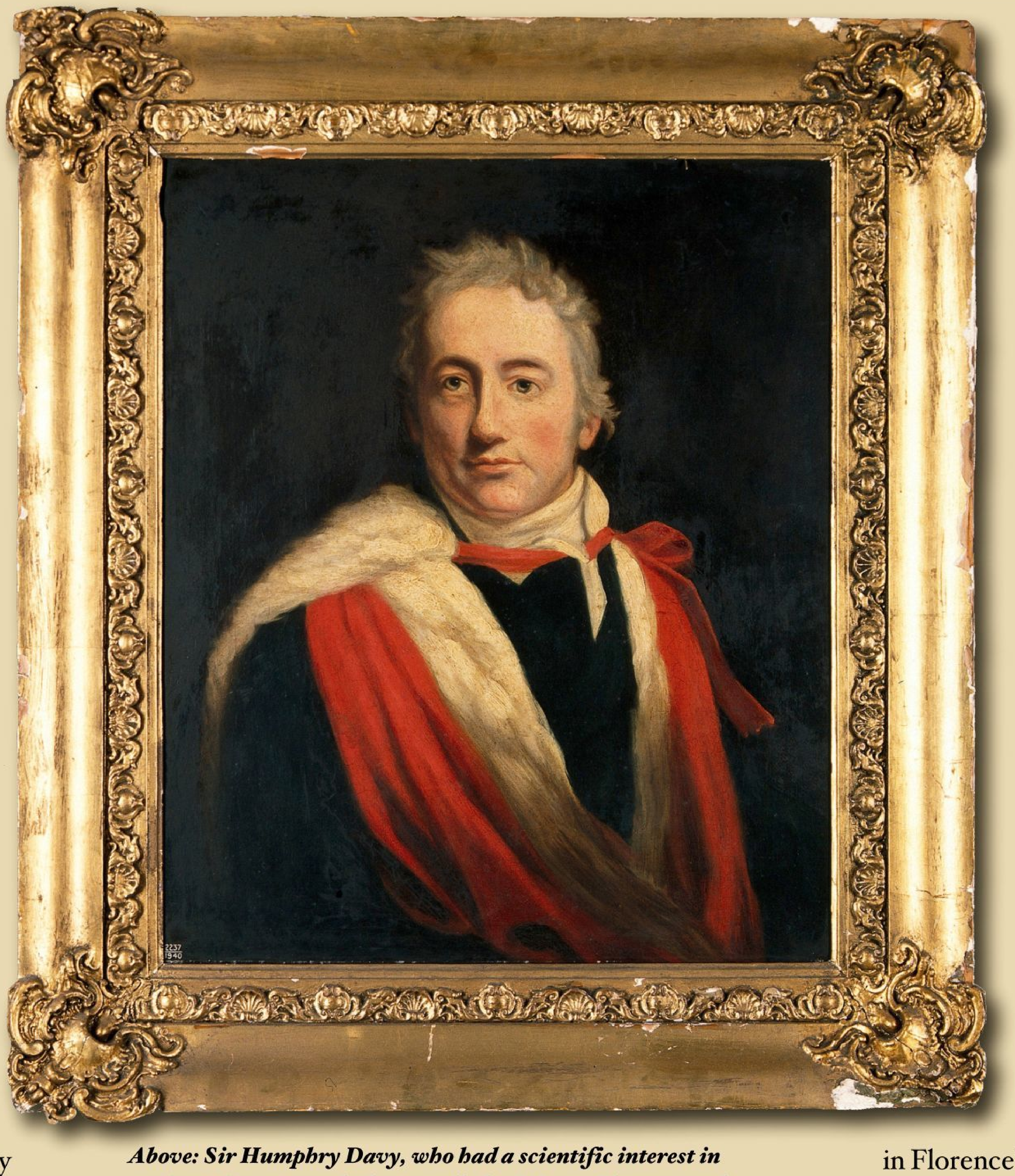
Most early archaeological science was by scholars whose interests spanned antiquity and the natural sciences, conducting analyses for their own interest and amusement. It was only in the 19th century that the idea of the scientific specialist emerged, with their reports commissioned by antiquarians and archaeologists. Austen Henry Layard's famous *Discoveries in the Ruins of Nineveh & Babylon* (1853) included an analysis of Assyrian bronzes by chemist TT Philipps. This has been called the first scientific study in an archaeological excavation report. In fact here, as in so many things, Faraday was ahead of his time.

Smell of myrrh

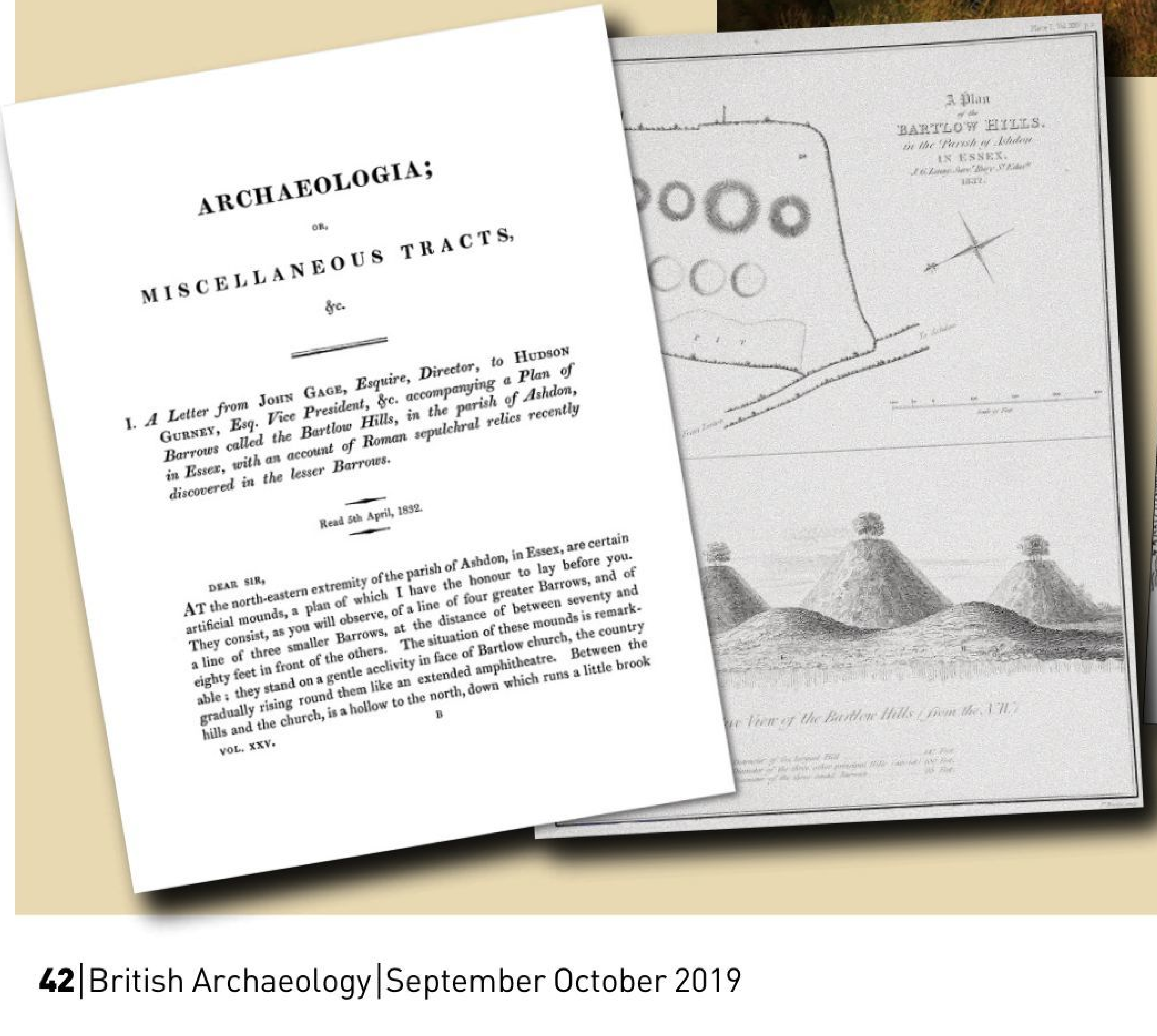
Michael Faraday was the third of four children. His father was a blacksmith, and the family were members of the nonconformist Sandemanian church. At the age of 14 Faraday was apprenticed to a bookbinder, which allowed him to read voraciously. To continue his self-education he joined the City Philosophical Society run by silversmith John Tatum. Members of the Society, many of them apprentices like him, took turns delivering lectures on scientific subjects. In 1812 Faraday began to attend Humphry Davy's weekly lectures at the Royal Institution. He made copious notes during these lectures, and using his binding skills he turned these notes into a book, which he presented to Davy.

Davy was impressed with Faraday, later referring to him as his greatest discovery, and gave him work at the Royal Institution. When Davy and his wife embarked on a two-year tour of continental Europe in 1813, Faraday travelled with them as Davy's assistant and valet. It was on this trip that Faraday's fascination with antiquities took hold: the group visited the Roman ruins at Nîmes, and in Florence's Museo di Storia Naturale they inspected Egyptian mummies, both whole and unwrapped. In his free time Faraday walked miles every day, exploring the cities that they visited. Rome made a particularly strong impression on him, and he visited the Colosseum, Trajan's baths, the Temple of Minerva Medica, and the Forum. In his letters home, he wrote of his astonishment at the survival of so many ancient tombs, temples, statues, pillars and roads.

Faraday remained at the Royal Institution after Davy's retirement. In 1825 he was appointed director of the



Above: Sir Humphry Davy, who had a scientific interest in ancient pigments and who travelled to Nîmes, Florence and Rome with Faraday



ARCHAEOLOGIA;

OR,

MISCELLANEOUS TRACTS,

&c.

I. *A Letter from* John Gage, *Esquire, Director, to* Hudson Gurney, *Esq. Vice President, &c. accompanying a Plan of Barrows called the Bartlow Hills, in the parish of Ashdon, in Essex, with an account of Roman sepulchral relics recently discovered in the lesser Barrows.*

Read 5th April, 1832.

DEAR SIR,

AT the north-eastern extremity of the parish of Ashdon, in Essex, are certain artificial mounds, a plan of which I have the honour to lay before you. They consist, as you will observe, of a line of four greater Barrows, and of a line of three smaller Barrows, at the distance of between seventy and eighty feet in front of the others. The situation of these mounds is remarkable; they stand on a gentle acclivity in face of Bartlow church, the country gradually rising round them like an extended amphitheatre. Between the hills and the church, is a hollow to the north, down which runs a little brook

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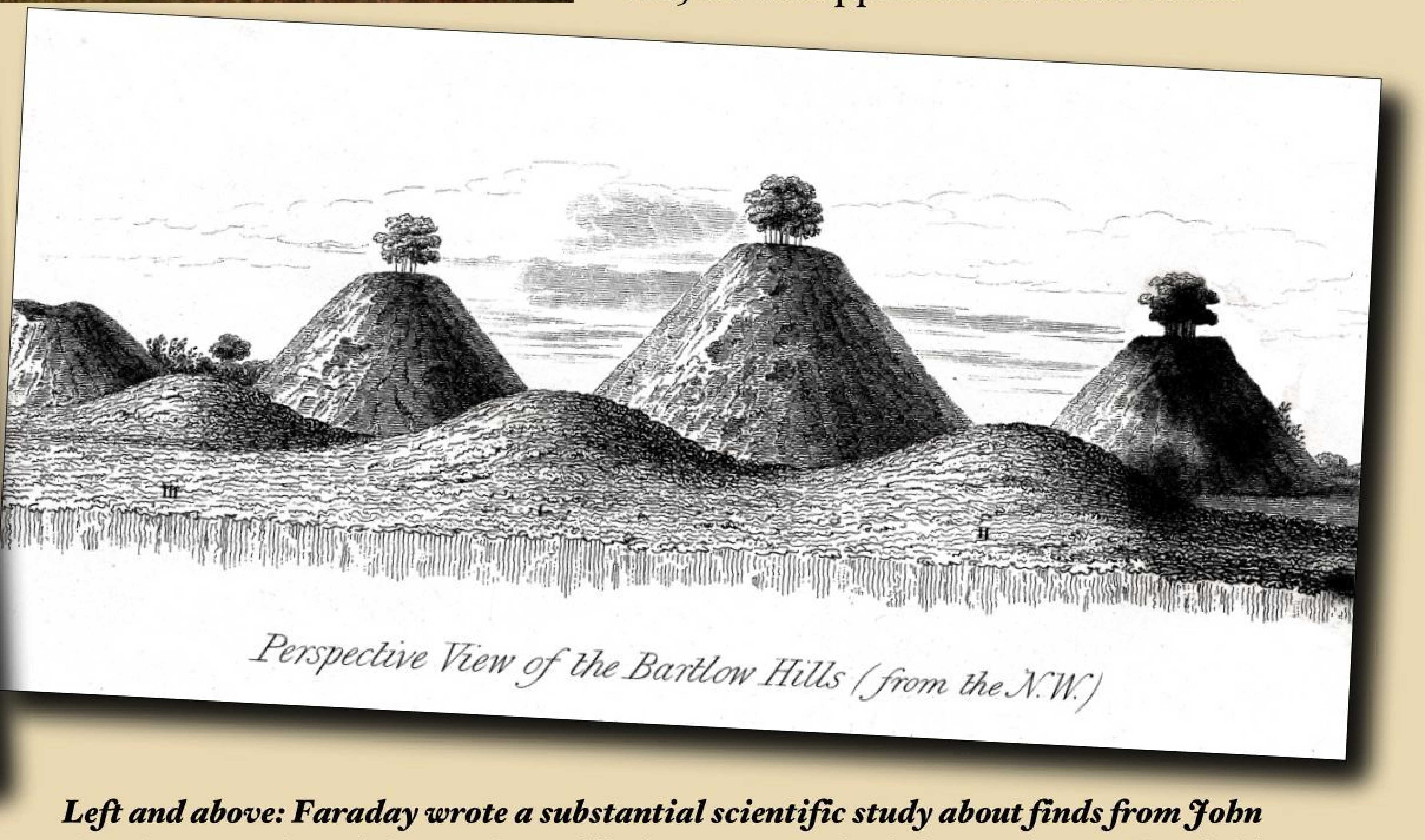
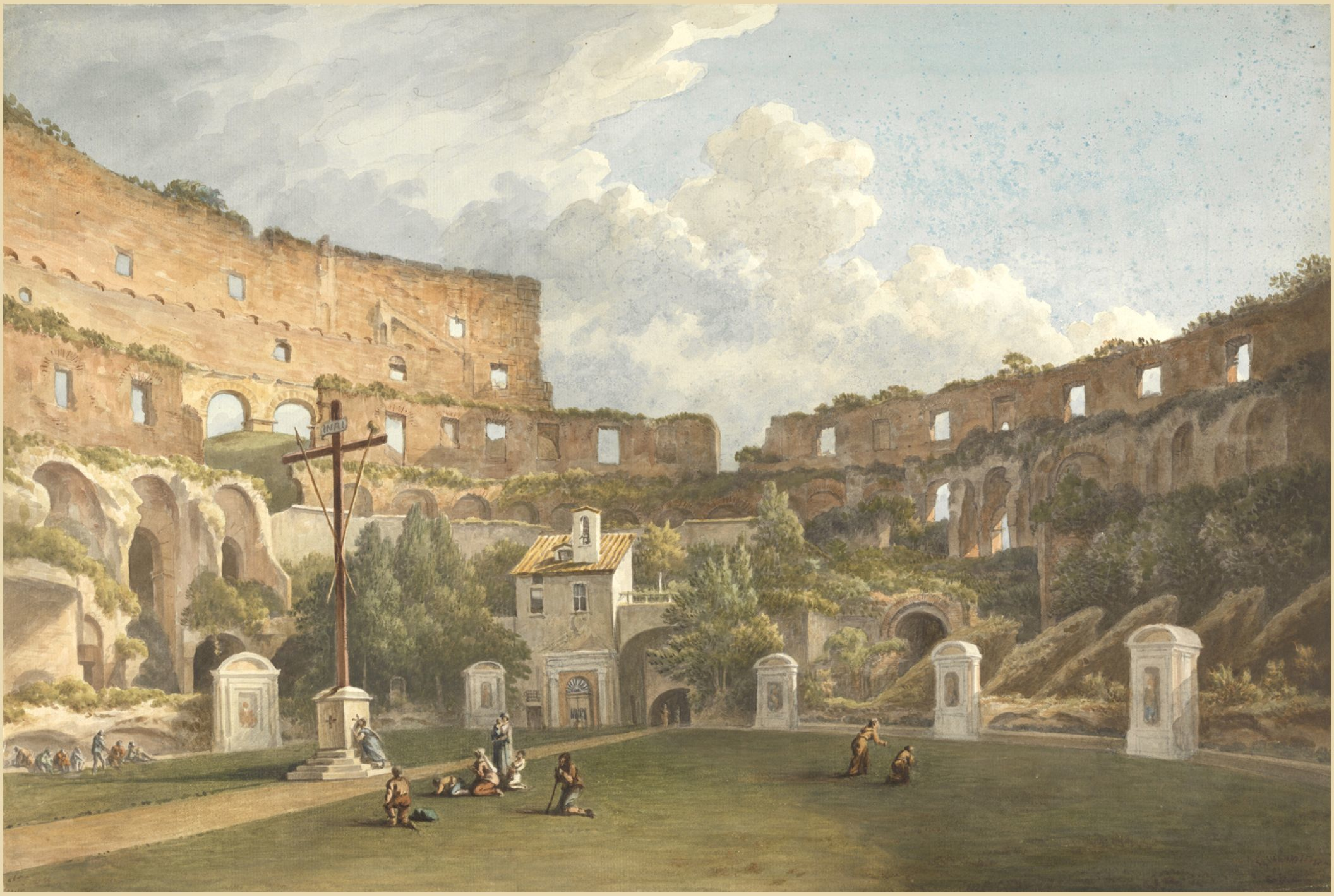
A Plan
of the
BARTLOW HILLS.
in the Parish of Ashdon
IN ESSEX.
1832.
To Ashdon
View of the Bartlow Hills (from the N.W.)


Perspective View of the Bartlow Hills (from the N.W.)

Left and above: Faraday wrote a substantial scientific study about finds from John Gage's excavation of the Bartlow Hills, large Roman burial mounds near Cambridge

BILL BLAKE, SOCIETY OF ANTIQUARIES



Above: Interior View of the Colosseum in Rome, by John Warwick Smith, around the time of Davy's and Faraday's visit in 1813

YALE CENTER FOR BRITISH ART/PAUL MELLON COLLECTION

laboratory, and in 1833 he became the Institution's first Fullerian professor of chemistry. By this time his reputation in the fields of chemistry and electricity was becoming established, and he was in great demand as a scientific consultant for government and industry. In amongst this work and his own world-changing research, he also found time for archaeology, not least at the Bartlow Hills.

The Bartlow Hills are a group of large Romano-British burial mounds south-east of Cambridge. From 1832, antiquarian John Gage made a series of excavations into them, uncovering burial chambers with metal, glass and organic artefacts. He sent many of these artefacts to Faraday, whose analyses were included in the papers that Gage published in the Society of Antiquaries journal *Archaeologia*.

Gage was a descendant of gunpowder-plotter Ambrose Rookwood, and served for many years as director of the Society of Antiquaries. One of his aims in excavating the Bartlow Hills was to confirm their date: Gage had proposed a Roman date, but local folklore linked them to the 1016 Battle of Assandun between Cnut and Edmund Ironside. The first excavations took place in 1832 and among the finds were two sealed glass vessels containing liquid and sediment, along with a small woven basket with a white-coated interior. He sent them to Faraday.

Faraday filtered the liquids that remained in the two vessels, boiled them, then evaporated them leaving only a residue, which he heated and burned. From the liquid in the larger vessel he found sulphate and muriate of soda and traces of ammonia. The residue in the smaller bottle was soft and waxy: Faraday heated some samples, burned and boiled others, and dissolved them with alkali and hot alcohol. He concluded that the material was a fat or oil, saponified over time. The white coating on the small basket was found to be a resinous material that gave a smell of myrrh or frankincense when heated, burned with a white smoky flame, and partially dissolved in alcohol. Faraday's report

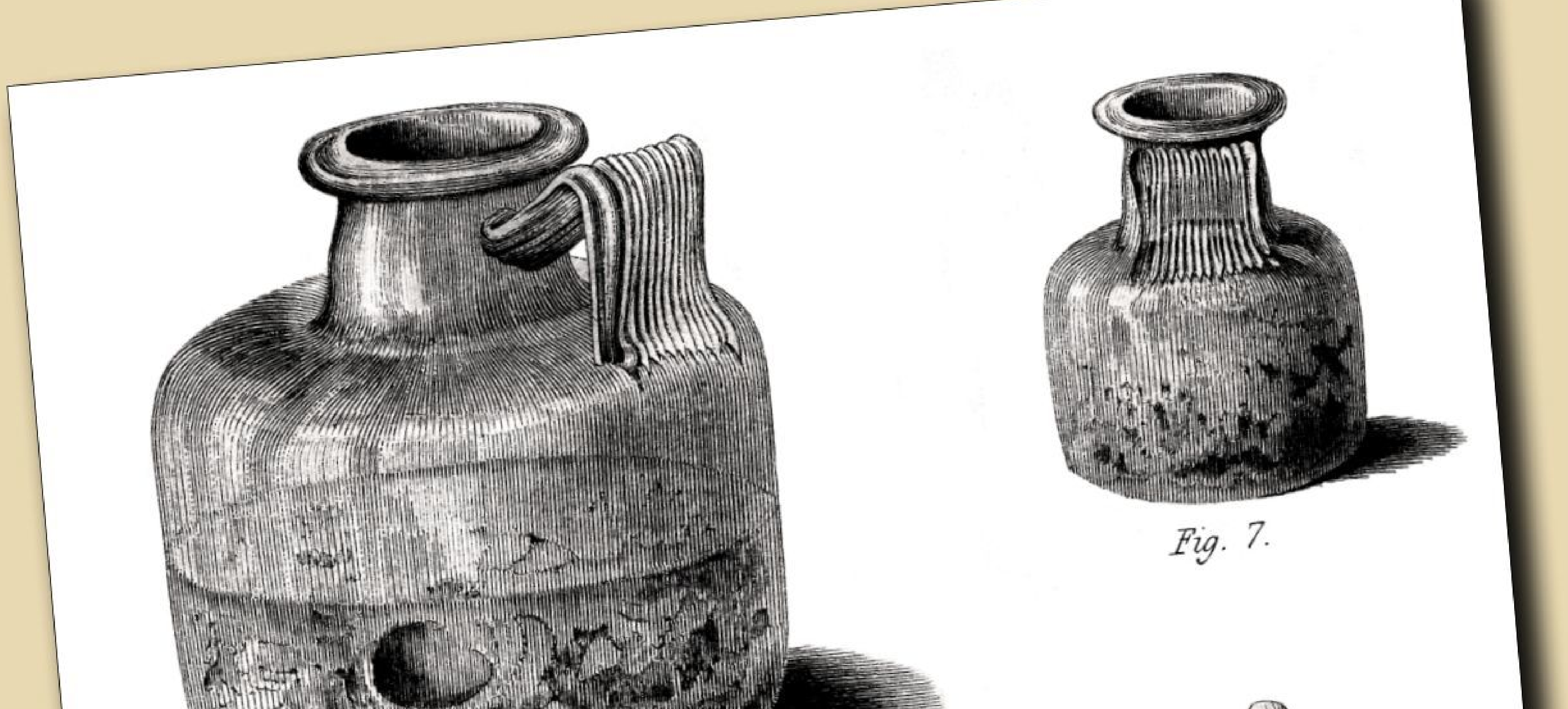


Fig. 5.
Fig. 7.
Fig. 6.

Right: Two sealed glass vessels from the Bartlow Hills, whose contents Faraday analysed

SOCIETY OF ANTIQUARIES

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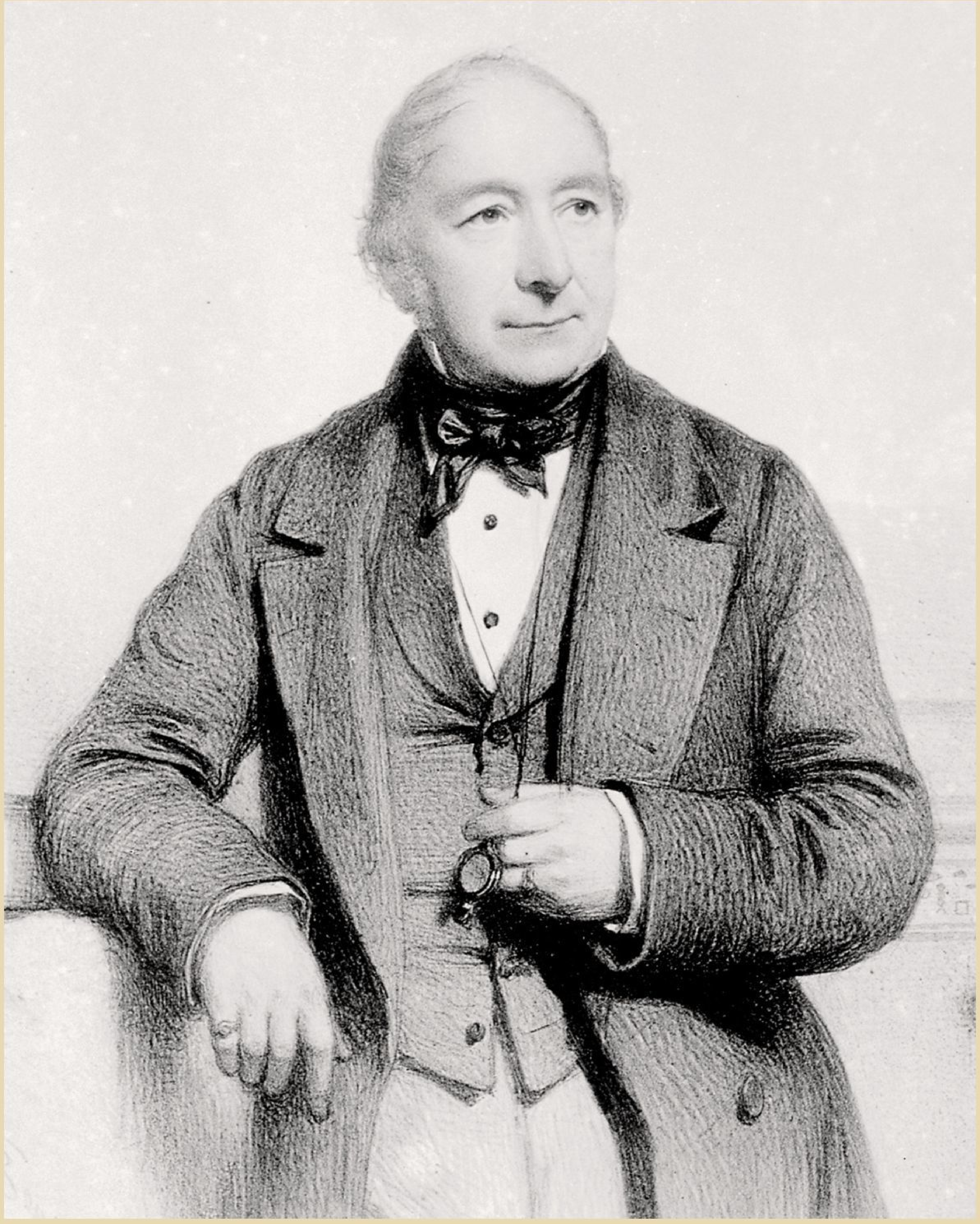


Left: Thomas "Mummy" Pettigrew (1791–1865), surgeon and antiquarian and contemporary of Faraday's

covered four pages of *Archaeologia*.

He was not the only expert who Gage consulted. The bones found in these first excavations were sent to the Royal College of Surgeons for examination by William Clift, the museum's keeper and conservator. He identified two individuals: one of indeterminate sex, and one robust male.

In 1835, Gage continued his excavations at the Bartlow Hills, with a large and distinguished audience watching him work. Scientist Reverend William Whewell was present, and composed some verse to remember the day:

Nobles and learnèd clerks, and ladies gay,
Who all, in fair assembly ranged, were by,
When antiquarian pickaxe broke its way
Through Bartlow's old mysterious tumuli

Again, Gage sent his finds to Faraday, who was particularly interested in a lamp with its wick and fuel intact. He analysed the contents of a sealed glass bottle, finding a plug of asphalt and beneath it a waxy solid substance. Underneath the waxy layer was a liquid that evaporated to a sticky, syrupy residue, which burned like sugar or honey. It is worth noting that Faraday's analytical methods included tasting and smelling the samples – a common part of science at the time, and to some extent still today.

Mummies & lead glaze

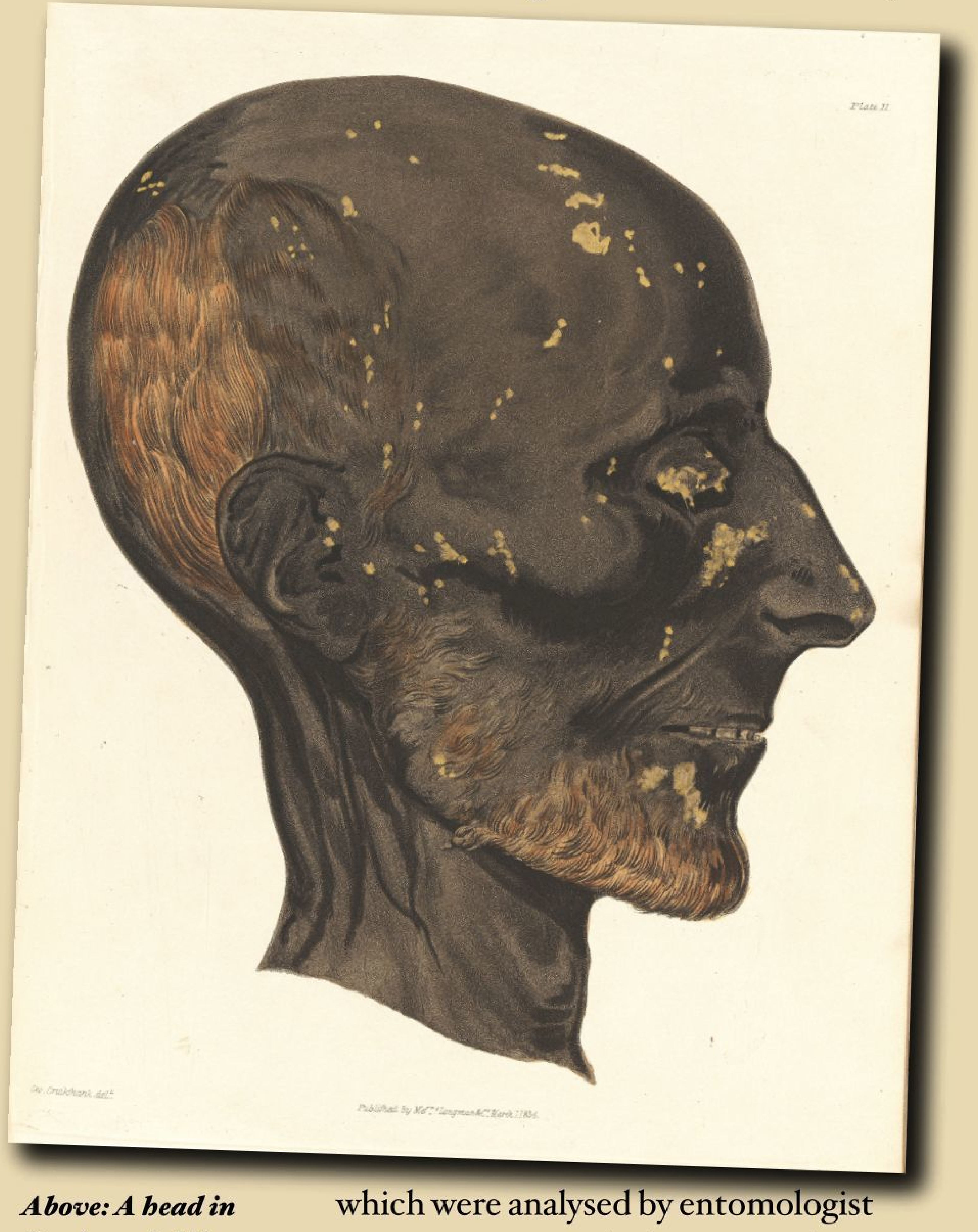
Thomas Pettigrew, a surgeon and antiquarian, was a contemporary of Faraday's: born just two weeks apart, they were both members of the City Philosophical Society. Pettigrew became a successful society surgeon, and began to devote his leisure time to the study of archaeology. A co-founder of the British Archaeological Association, he is best remembered for his pioneering work on Egyptian mummies. His public unrollings of mummies brought him fame and the nickname "Mummy" Pettigrew.

In 1834 he published *A History of Egyptian Mummies* which included historical, ethnographic, scientific and medical studies and analyses. Pettigrew deferred to classical sources on mummification including Herodotus, but he was keen to compare them to the physical remains. To reverse engineer the processes of mummification he turned to his old friend Faraday.

In March 1833 Pettigrew unrolled a mummy at the Charing Cross Hospital. On parts of the skin he found small crystals, which he collected and sent to Faraday. In Pettigrew's book, Faraday's report is included as a footnote:

> *The small needle-like crystals are very curious, but too minute in quantity, and too vague as to their origin, to allow of much being made out relative to them… The substance may probably be a result of slow action upon organic (perchance animal) matter, and has, perhaps, been assisted in its formation by heat.*

As in his work for Gage, Faraday was just one of the specialists who Pettigrew employed. The same mummy had contained fragments of insect remains, which were analysed by entomologist FW Hope. Scottish chemist Andrew Ure analysed crystals from another of Pettigrew's mummies, and found them to be common salt, with traces of soda and lime: possibly the natron salts used to desiccate bodies in the early stages of mummification.



***Above:** A head in Pettigrew's* **History of Egyptian Mummies** *(1834); Faraday reported on crystals on the skin of a mummy*

Perhaps Faraday's most significant contribution to archaeological science came from his analysis of the glaze of a ceramic vessel found on a Roman site in Ewell, Surrey. The excavator was

Hugh Welch Diamond, a pioneer of both psychiatry and archaeological photography. Diamond served as superintendent of the Surrey County Lunatic Asylum, and also as honorary photographer to the Society of Antiquaries. Like Gage and Pettigrew, Diamond had wide-ranging antiquarian interests: all three men were members of the Numismatic Society, they all collected Egyptian antiquities, and they all commissioned reports on their finds from Faraday.

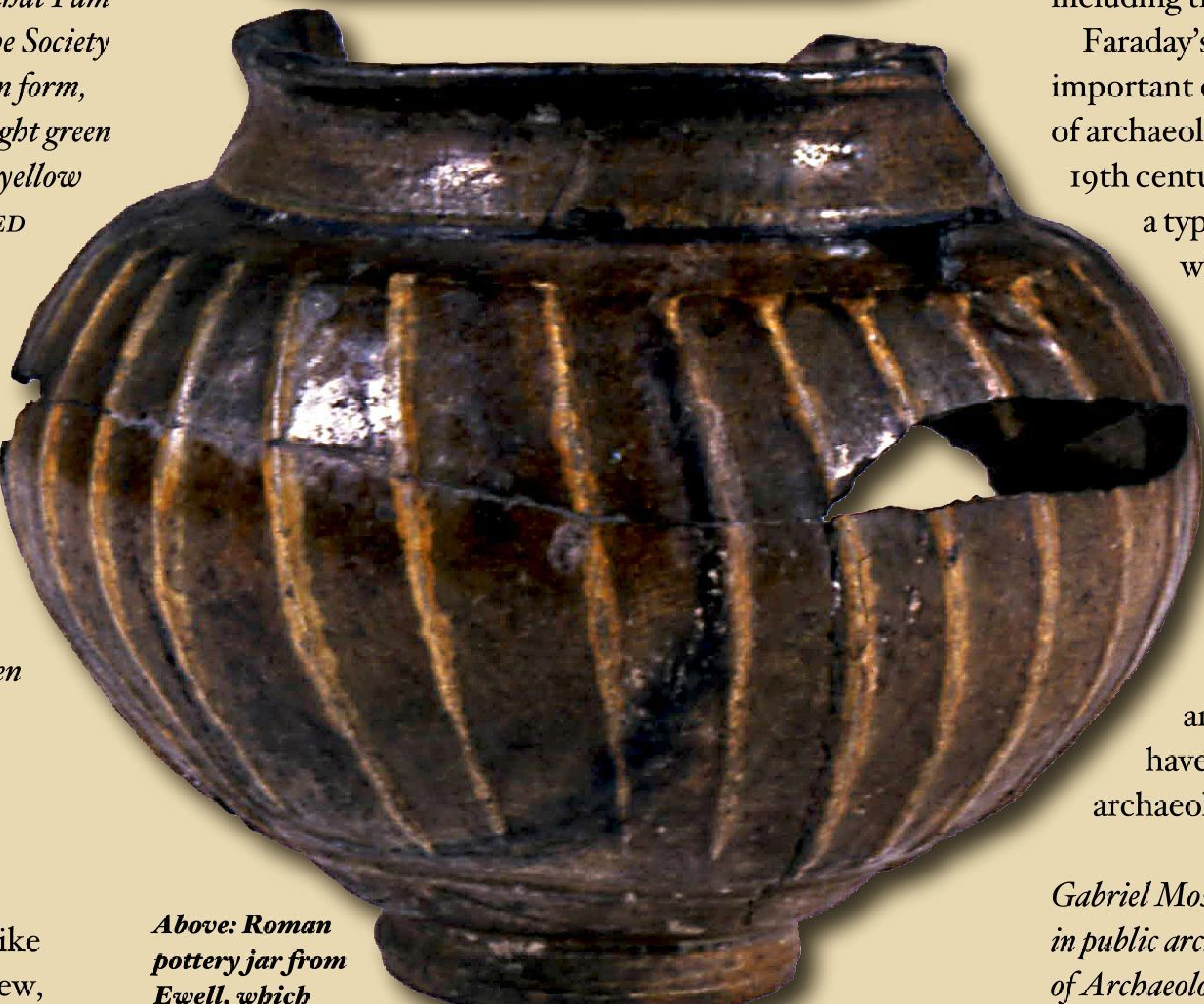
In 1847, a few miles from Diamond's asylum, workmen uncovered a curious set of pits dug deep into the chalk. In these shafts they found animal bones, oyster shells and a variety of Romano-British ceramics. One of the vessels stood out from the others, as Diamond recalled:

> *One of these Vases is so remarkable that I am desirous of calling the attention of the Society especially to it. It is of perfect Roman form, composed of a thin material, of a bright green colour, with stripes of white or pale yellow laid on it, BEING PERFECTLY GLAZED INSIDE AND OUT, apparently the same as in a piece of modern pottery. Its antiquity, however, is incontestable, and some of the most competent judges have pronounced it to be at least coeval with the other remains. I took it with my own hand from the soil, in which it was firmly impacted, at a depth of about eighteen feet [5.5m] from the surface, after working a long time on the spot.*

In his report to the Society of Antiquaries, Diamond included Faraday's study of the glaze. Unlike in his work for Gage and Pettigrew, Faraday gave no details of his methods, but stated that "There is abundance of lead in [the glaze], with silver also, derived perhaps from the vessel itself, or perhaps added as part of the glaze."

This was the first proof that the Romans had used lead glaze, a technology previously believed to date to the 13th century. Earlier scholars had found no definitive evidence of Roman glazed ceramics, and even a century after Faraday's death there remained some disputes among archaeologists. Recent research has proved beyond doubt that Faraday was correct. The Romans had indeed pioneered the use of lead glazes.

Left: Hugh Welch Diamond, excavator of a Roman site in Ewell, Surrey



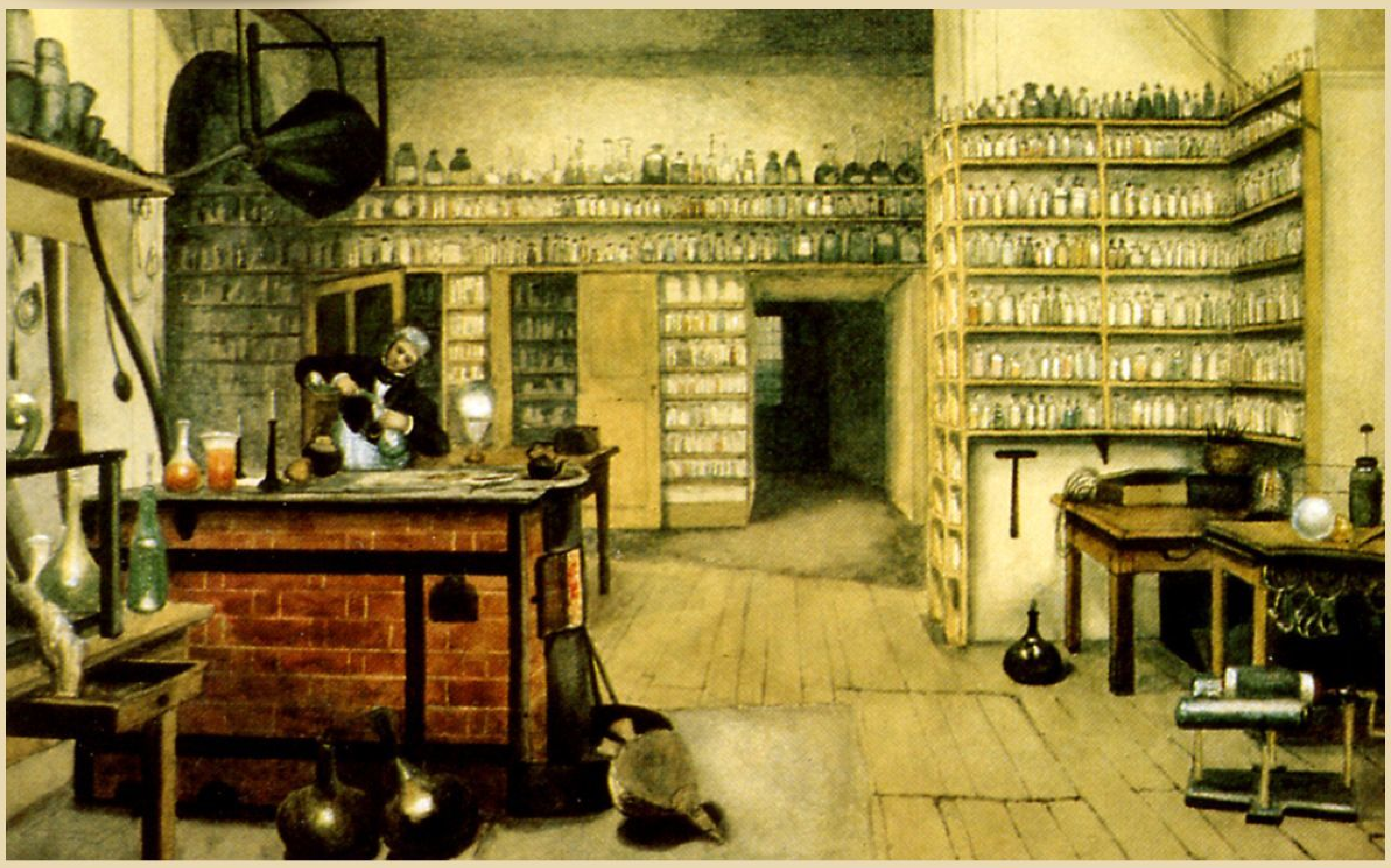
Above: Roman pottery jar from Ewell, which Faraday established had been finished with a lead glaze, the first demonstration that the technology had pre-medieval origins

Endless science

One of the most famous images of Faraday shows him hard at work in his laboratory at the Royal Institution, mixing chemicals over a furnace, surrounded by shelves of bottles and electrical equipment. From this room flowed an endless stream of scientific discoveries, large and small. A few of the smaller ones, as we have seen, were archaeology flavoured. Would Mr Faraday inspect this soil from a burial mound in Jerusalem? This dust from inside the Great Pyramid? Would he advise on lightning conductors for Trajan's Column? For several years he worked with Edward Hawkins, keeper of antiquities at the British Museum, to study the conservation of artefacts including the Parthenon Marbles.

Faraday's work demonstrates an important development in the history of archaeology. In the first half of the 19th century we see the emergence of a type of professional consultant whose analyses could be included in archaeological reports under their own name. These analyses added to the archaeological findings, and the authority of scientists like Faraday gave them weight and significance. Chemistry and other natural sciences have played important roles in archaeology ever since.

Gabriel Moshenska is associate professor in public archaeology at UCL Institute of Archaeology ■



Right: Faraday in his laboratory at the Royal Institution, from a painting by Harriet Moore

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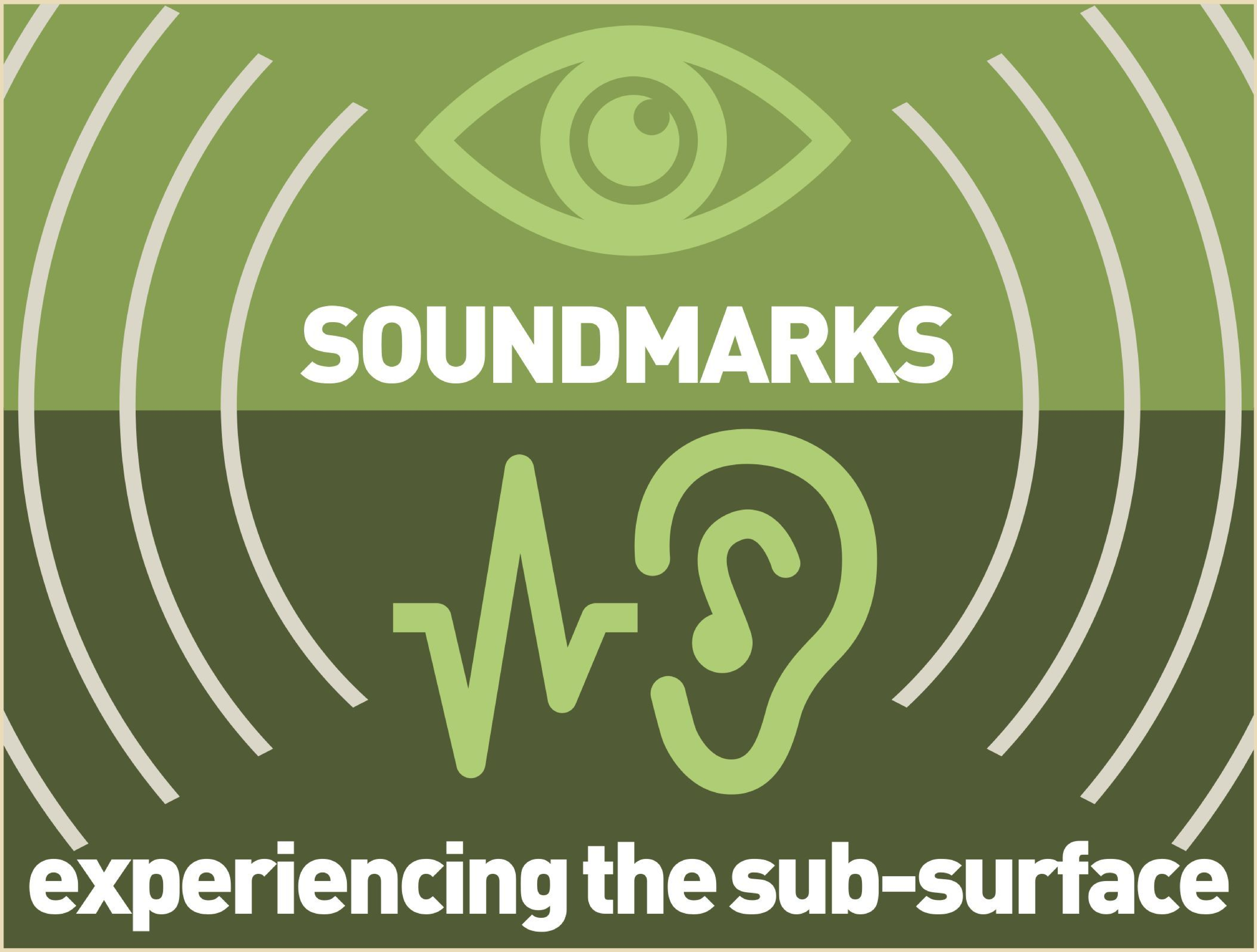


SOUNDMARKS

experiencing the sub-surface

Rose Ferraby and Rob St John are exploring the below ground landscape of Roman Aldborough through sound and visual art

Aldborough Roman town (Isurium Brigantum) in North Yorkshire was alive once more with the sound of archaeological exploration this May. In its tenth year now, the Aldborough Roman Town Project has been synthesising past work and carrying out surveys and excavations in order to better understand the complexities of this rich, archaeological landscape (see feature May/Jun 2012/124, News Jan/Feb 2014/134, News+ May/Jun 2019/166).

Archaeology offers us an intimacy with this place: looking out across the fields we are able to imagine and animate in our minds the features of the town, its material forms, the to-and-fro of past life. This archaeological imagination is something that is honed and developed through extended work in the locale; a close knowing of the land. But how can we communicate this extension of the invisible past more widely?

One way is to explore through creative practice, experimenting with artistic methods as a means of expressing subtle understandings of landscape, and offering new modes of engagement which potentially draw in new audiences. Our new collaboration – SOUNDMARKS – is exploring the hidden landscape of Aldborough through sound and visual art. Funded by Arts Council England in partnership with English Heritage and the Friends of Roman Aldborough, we draw on our shared knowledge across art, landscape and archaeology to narrate past stories of life and change through creative techniques.

Over the summer, we will create an art trail through Aldborough. Around the trail visitors will be able to hear audio guides to eight particular locations, alongside soundworks and visual art based upon the sub-surface landscape. All elements will be available free online, and visitors will also be able to access the work at a new digital hub in the English Heritage museum. This is part of a broader project designed to improve understanding of the archaeology, including new interpretation media around the museum site, and to encourage new curiosity for Roman Aldborough.

We will host an exhibition and sound installation at Aldborough in late August, during which there will be an art-archaeology seminar to see how the work draws out research in the area. We will be running a series of workshops exploring the mixed use of sound and visual art to explore archaeological landscapes. A limited-edition artists' book will unfold elements of the project, including the creative, collaborative practice. Mario Cruzado is making a film about our creative process, and a podcast will accompany the work. All this, we hope, will offer both a sense of Aldborough's sub-surface archaeological world, and insight into creative practice and collaboration in archaeology.

Sonic boreholes

As we write, however, we are in that wonderful period of the project where we can experiment, swirling round ideas as we root through the Aldborough landscape. We've attached pinhole cameras to fence posts to capture tracks and traces of atmosphere. Hydrophones have been dangled and drifted in the river. Drawings have been sketched. Mental notes made. During the excavation Rob St John – a sound and visual artist – experienced the nitty gritty of the sub-surface for himself. We reflected on archaeological practice: the slow gathering and garnering of knowledge, the attentive reconstruction of an imagined past.

One evening when it was quiet, we returned to make our own excavations of the sound-world of site. We began with tools, and the scrapings and scrunchings that are so vital to our archaeological understandings: that acute listening that is so much part of "feeling" a layer or soil change. Contact mics were attached to a mattock, which then carved into spoil. Sub-angular grits and pebbles pranged and sang against the metal. Soft sandy silts purred past. The earth was alive with unimaginable nuances of sound, bringing forth the realisation that so much of how we sense archaeology is with our ears. It was addictive, this new listening: utterly absorbing as each new area of ground offered up its voice. Already this collaboration has opened up new ways of understanding the world, a new vocabulary for the landscape, and a shared excitement of really getting under the surface of a locale in so many ways.

Above: Getting beneath the surface during the May 2019 excavations at Aldborough

Right: Rob St John experiments with contact mics on a planning frame, filmed by Mario Cruzado

Below: The authors recording at the Aldborough amphitheatre, in a Mario Cruzado film still

MARTIN MILLETT, ROSE FERRABY, MARIO CRUZADO

Two of the sites for the art trail are located down by the River Ure, now bounded by Environment Agency banks. Work by our colleagues Charly French and Sean Taylor (Cambridge University) is allowing us to imagine a very different and dynamic riverine environment in the past. Their sediment cores have shown the results of deforestation upstream, grey silts changing to coarser, less filtered grains. The Roman river would have been snaking and braided, forming temporary islets, and areas of flooding in the late winter. We were excited by re-animating this environmental change in the landscape, thinking of ways of sounding these subtleties of sediment. We will be creating sonic boreholes at those sites, sinking through the vast depths of stratigraphy. To create this, hydrophones have been dipped in the river and down the abandoned boreholes, listening deep within the alluvial stretches. Rob will be immersing tapeloops in various substances from the floodplain to see how they decay and erode the very fabric of the sound.

ROB ST JOHN, ALDBOROUGH ROMAN TOWN PROJECT

Above: Rob St John's sound recording toolkit by the River Ure

Above: The authors discuss archaeological processes during excavations in May 2019

Right: Excavation constantly inspires with new combinations of colour and texture

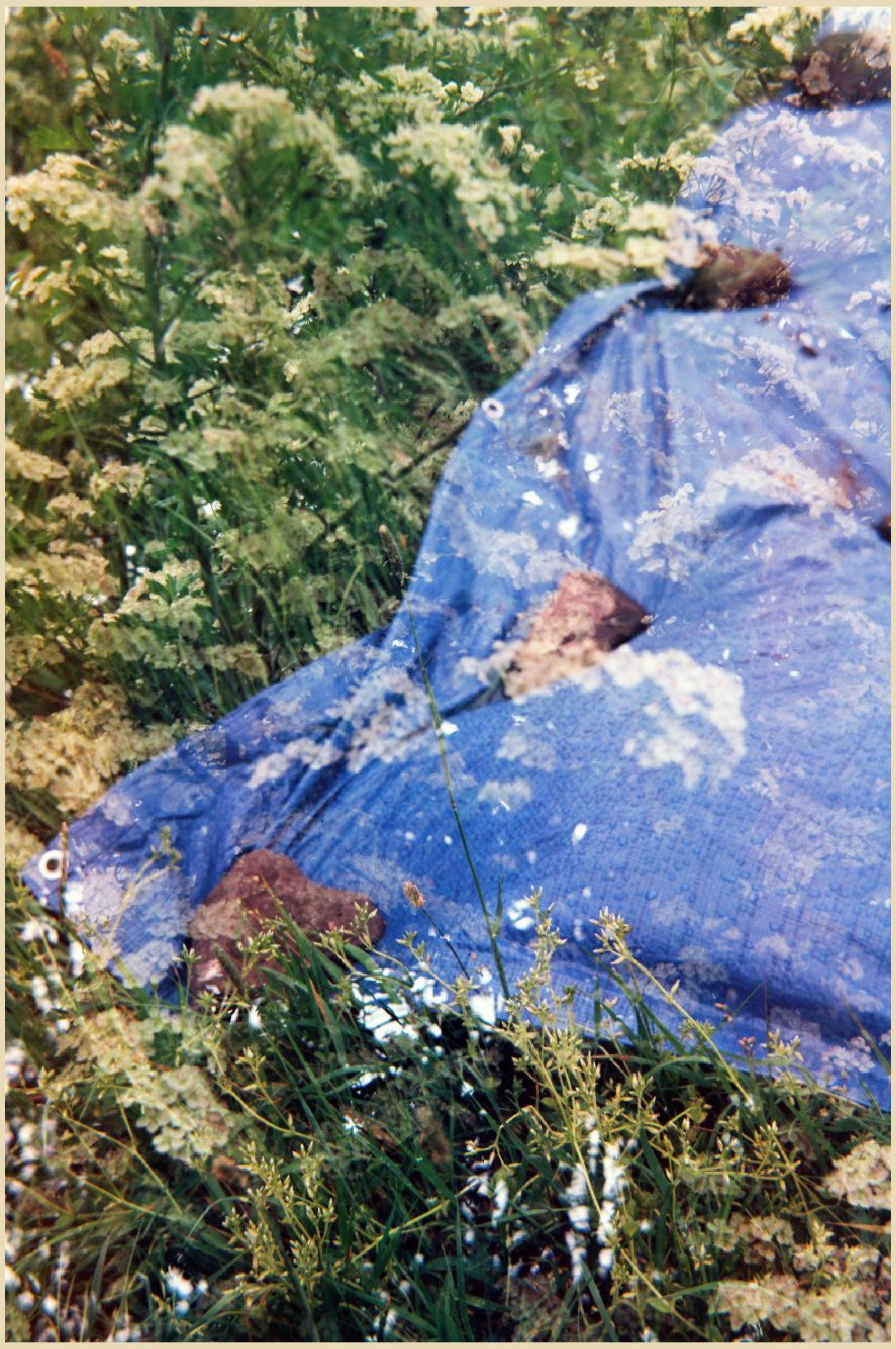
ROSE FERRABY

Part of our sonic exploration has been more digital, as Rob shares the world of granular synthesis: a sampling of micro-sounds, or grains of sound, which can then be captured and layered to create a new sound-world. These scaled modes of selection and reconstruction echo the very heart of archaeological practice, excavating away and re-layering in imaginative forms.

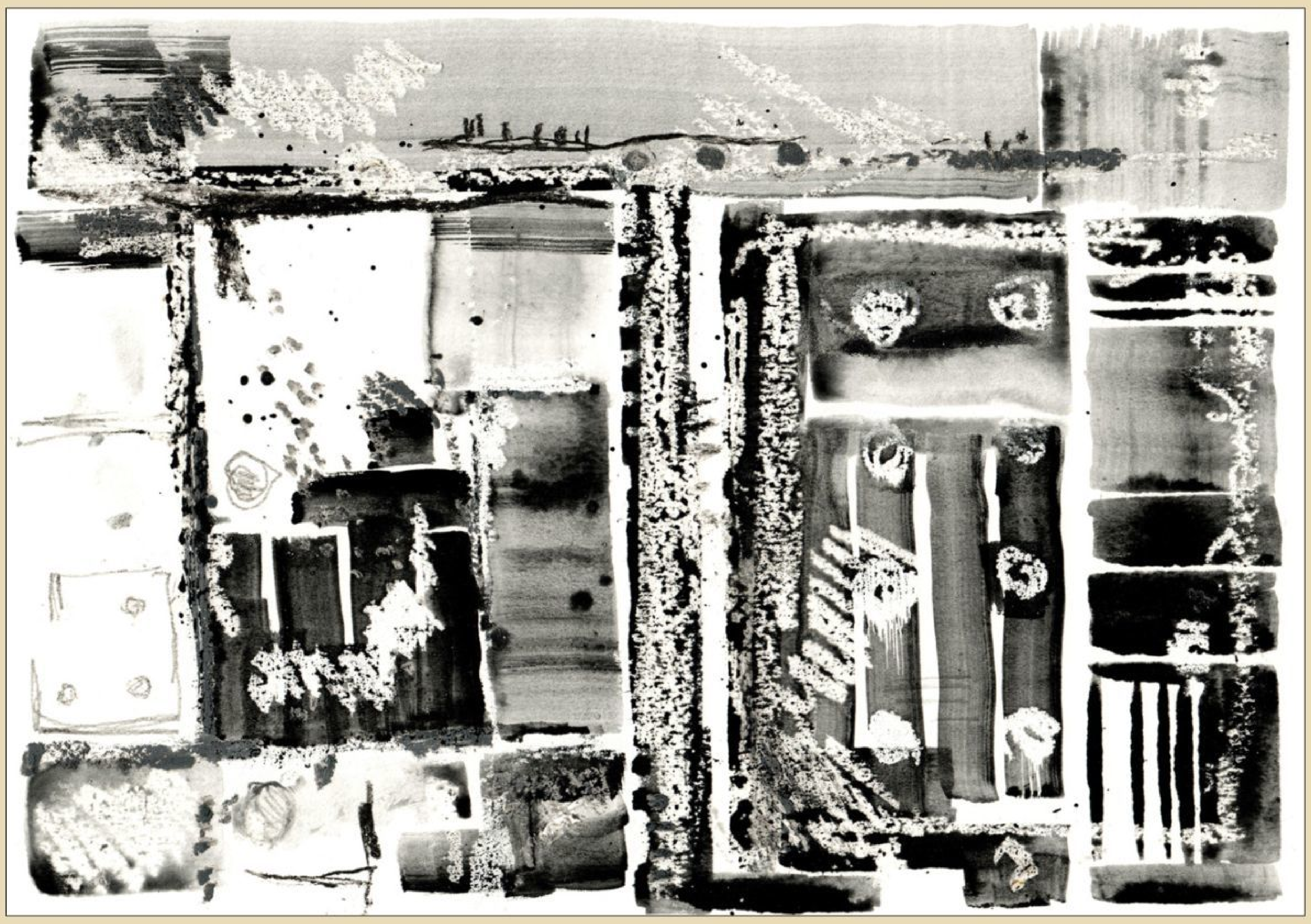
Much of the inspiration for this project lies in the back-and-forth of methods, ideas and practices between the two of us. First was a reverberation between excavation and sound recording. Then the manipulation of sound and the creation of images. The combination of felt archaeology, traced landscape and attentive listening has created a very particular visual imagination that will be articulated in the paintings that Rose is making. These slow, layered combinations of graphite and oil bars overlain with watercolour will have a dialect of mark-making formed in the sound worlds created by Rob, as well as in the felt archaeology of the site.

In our previous work we have both approached landscape with an interest in how being attentive to small details, processes, voices and stories, might bring us closer to an understanding of the relationships that exist between people and the land. Our creative practices find ways of picking these elements out, re-animating, re-layering and re-ordering them to bring new modes of understanding. The joy of this collaboration is being able to respond so directly to a site, to learn new ways of sensing and articulating landscape, and enjoying the freedom of the archaeological imagination. What particularly makes art and archaeology such exciting bed-fellows is the repeated themes of curiosity, discovery, imagination and sheer enjoyment of the narratives that can be drawn from monumental, or small and ordinary things.

ROB ST JOHN, ROSE FERRABY (3)



Above: **Hawthorn/Tarp**, *double exposure on medium format film by Rob St John*

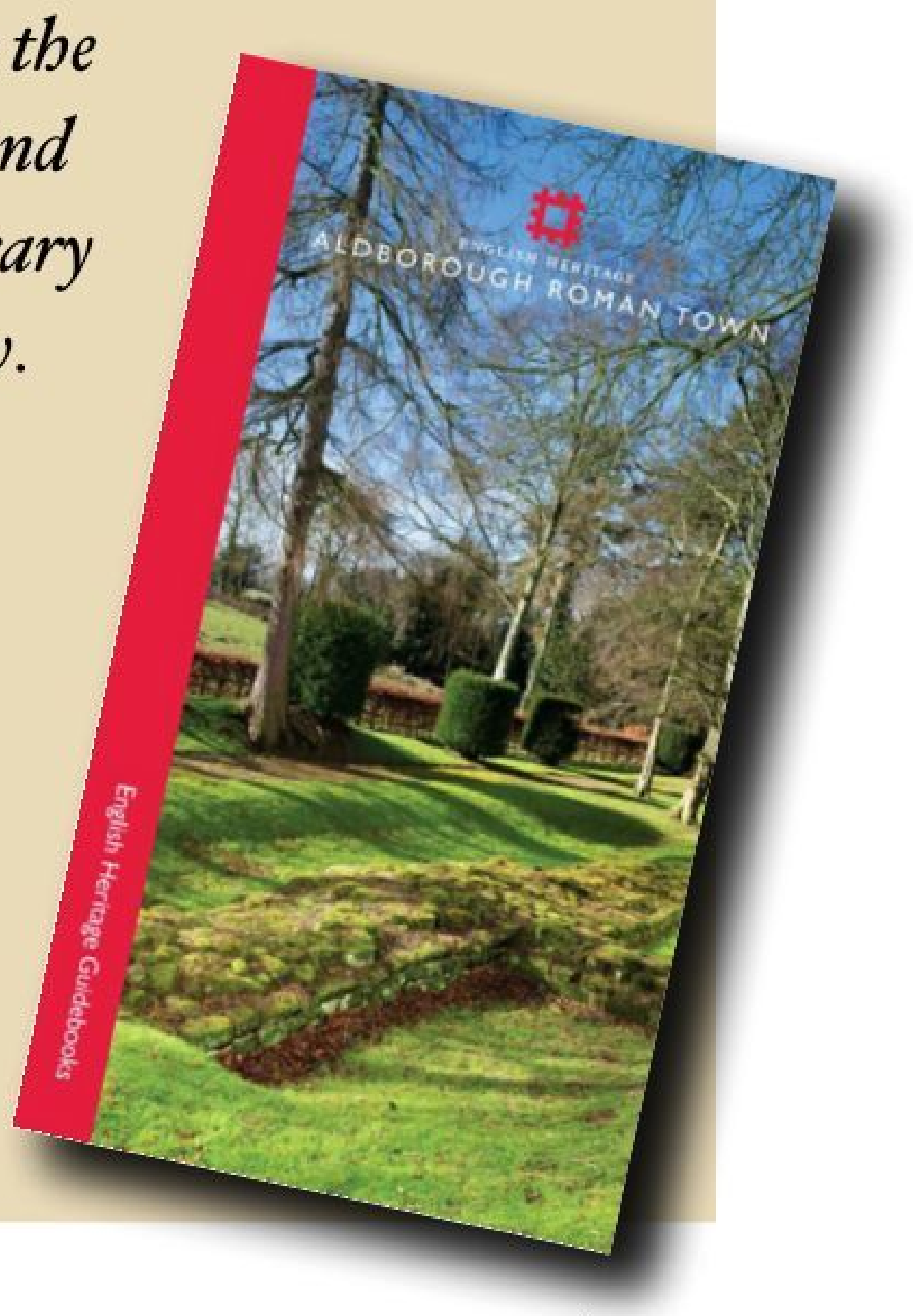


Above: **Marked Foundations**, *a new painting by Rose Ferraby exploring the marks and tones reflected in magnetometer surveys*

Right: Using contact mics on a sieve created a fascinating sound-world

Below: **Past Present**, *a photograph by Rose Ferraby using a slide from the archive of Mary Chitty who excavated at Aldborough between 1934–38*

The SOUNDMARKS *exhibition will take place at The Shed, Aldborough August 24–31 2019. On the last day there will be a seminar on art and archaeology, and it will then go on tour (www.soundmarks.co.uk). The Aldborough Roman Town Project is run from the Faculty of Classics, University of Cambridge.* Isurium Brigantum: An Archaeological Survey of Roman Aldborough *by Rose Ferraby & Martin Millett, will be published by the Society of Antiquaries in 2020 (https://aldboroughromantown.wordpress.com). Rose Ferraby is an archaeologist and artist based in North Yorkshire; she co-directs the Aldborough Roman Town Project. Rob St John is an artist based in Bowland, Lancashire; his practice is focused on the blurrings of nature and culture in contemporary landscapes (see www.robstjohn.co.uk)* ■



Right: Martin Millett and Rose Ferraby wrote the English Heritage guide to the Roman Aldborough guardianship site

Radiocarbon dating's first revolution

In our second feature celebrating 70 years of radiocarbon dating, Mike Pitts looks at how old trees came to the rescue of an unexpected problem

As I explained in my previous feature (Nov/Dec 2018/163), the origins of carbon dating lay in the Second World War US Manhattan Project and the development of atomic bombs. Willard Libby, a Nobel prize-winning chemist, had a vision that the carbon-14 isotope his lab had discovered could be used to determine the age of historic artefacts. In the early 1950s he successfully showed that measuring the amount of radiocarbon in objects of known antiquity, mostly wood from ancient Egypt, more or less accurately, if not very precisely, predicted their age.

As radiocarbon dates accumulated around the world, archaeologists grew more confident with the "mysterious boffinry", to use Colin Renfrew's phrase. There was growing concern, however, that something seemed to be wrong. On one occasion in 1959, Glyn Daniel noted that many of the results were, "to put it mildly… at variance with archaeological dating". In northern Europe the dates were "shaking", adding a millennium of age to a Neolithic era that conventionally began in 2000BC and lasted only a few centuries.

Nonetheless, by the mid 1960s archaeologists were beginning to get used to the idea of scientific dating and the effect it often had of stretching out their old chronologies, which had inevitably relied on an element of guesswork. And then a huge spanner fell into the works. One of Libby's original assumptions turned out to be wrong. But scientists figured out an ingenious way of adapting to the new understanding. Radiocarbon dating underwent its first revolution, and scored its first major hit in changing the way we think about human history.

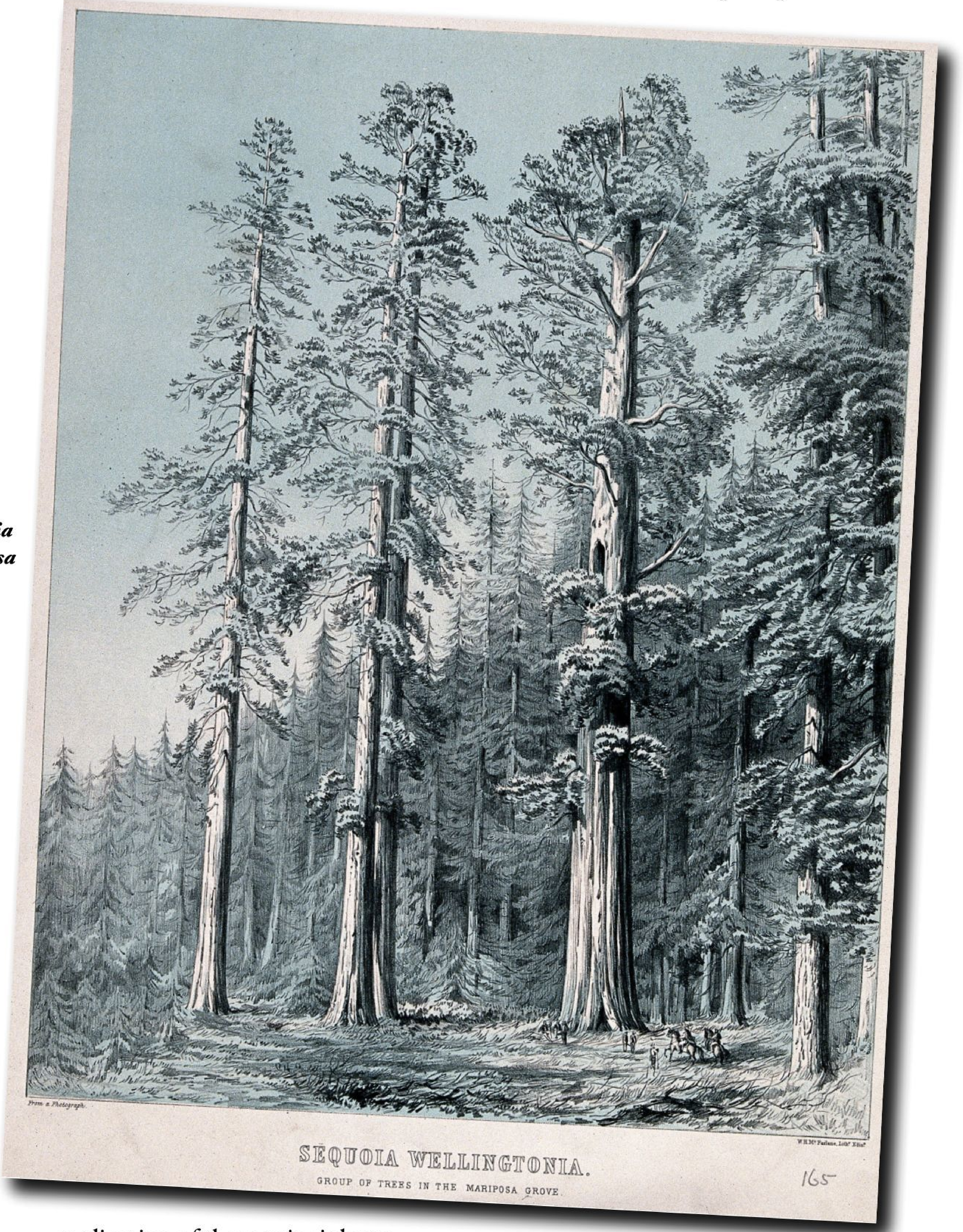
Now archaeologists really did have something to worry about.

Counting tree rings

Early studies seemed to support Libby's theory that the level of atmospheric radiocarbon had been constant for the past 5,000 years, a necessary assumption for the dating process. But there was a problem. The fit between predicted and actual carbon dates was rarely spot on (even allowing for standard deviation ranges of two or three centuries). And it was curious how carbon dates for apparently known-age Egyptian Old Kingdom artefacts seemed always to be a few centuries too young. There was a need for testing with greater precision.

The solution lay with tree rings. Trees add a new growth ring just under the bark every year. Museum visitors are familiar with slices of trunks engraved with historic events, showing the size of the tree at the time: the American Museum of Natural History in New York and the London Natural History Museum display sections of the same giant sequoia (known as the Mark Twain tree), cut down in 1891. If you knew a tree's felling date, you could count back through the years, one ring at a time, and establish precisely when a narrow strip of wood was growing. You could then carbon date that strip, and compare the result with the known age. The Mark Twain tree was born in AD550. There are older trees, also growing in California, high in the dry, subalpine White Mountains. Here can be found gnarled, almost dead-looking things known as bristlecone pine. There are three species. A Great Basin bristlecone pine (*Pinus longaeva*) is currently said to be the oldest confirmed living organism on Earth, at (in 2019) 4,852 years.

Even that is not the limit for counting rings, however. Trees are affected by vagaries of climate and weather, so that rings will be thinner or thicker depending on conditions during the growing season. Within a given region and for a particular species, this creates consistent ring patterns across forests. That means any number of pieces of wood can be matched up against each other. Old wood in a tree that began growing a thousand years ago, for example, might be aligned with young wood from a tree that died 900 years ago – but itself lived for a thousand years, so reaching back a further nine centuries before the first tree. In this way, if suitable fossil wood is available (a key source turned out to be Irish bog oak), a ring sequence can be extended back into the past far beyond the age of any one tree. The idea had been proposed as long ago as 1837, by the English mathematician and computer inventor Charles Babbage. "The application of these principles to ascertaining the age of submerged forests, or to that of peat mosses," he wrote with characteristic foresight, "may possibly connect them ultimately with the chronology of man."


From a Photograph.
W.H.Mc Farlane, Lith^r Edin^r
SEQUOIA WELLINGTONIA.
GROUP OF TREES IN THE MARIPOSA GROVE.
165

***Right:* Giant sequoia trees in the Mariposa Grove, California, 19th-century lithograph by WH McFarlane**

WELLCOME COLLECTION/CC BY

If this worked with trees preserved in English costal peats or Irish bogs, it applied too in the Californian White Mountains, where dead bristlecone pine wood had been found of greater age than living. With cross-checks to avoid confusion from missing or duplicated rings, dendrochronology, as the technique is known, has now created thousands of sequences around the world, which together reach back nearly 12 millennia. Just as cosmic rays in the outer atmosphere had for eternity been creating carbon-14, messengers which one day people would use to help read their forgotten story, so on the ground, around the world, trees had been storing up a record of what those rays had achieved year by year. It just needed someone to open up the book.

Something wrong

Inspired by a brilliant Dutch physicist called Hessel de Vries, in 1958 scientists at Cambridge University took a large chunk of sequoia wood from its display at the entrance lobby to the Botany School, and drilled it with holes (this was done from behind, and the polished slice, back in place, now looks good as new). The samples were carefully

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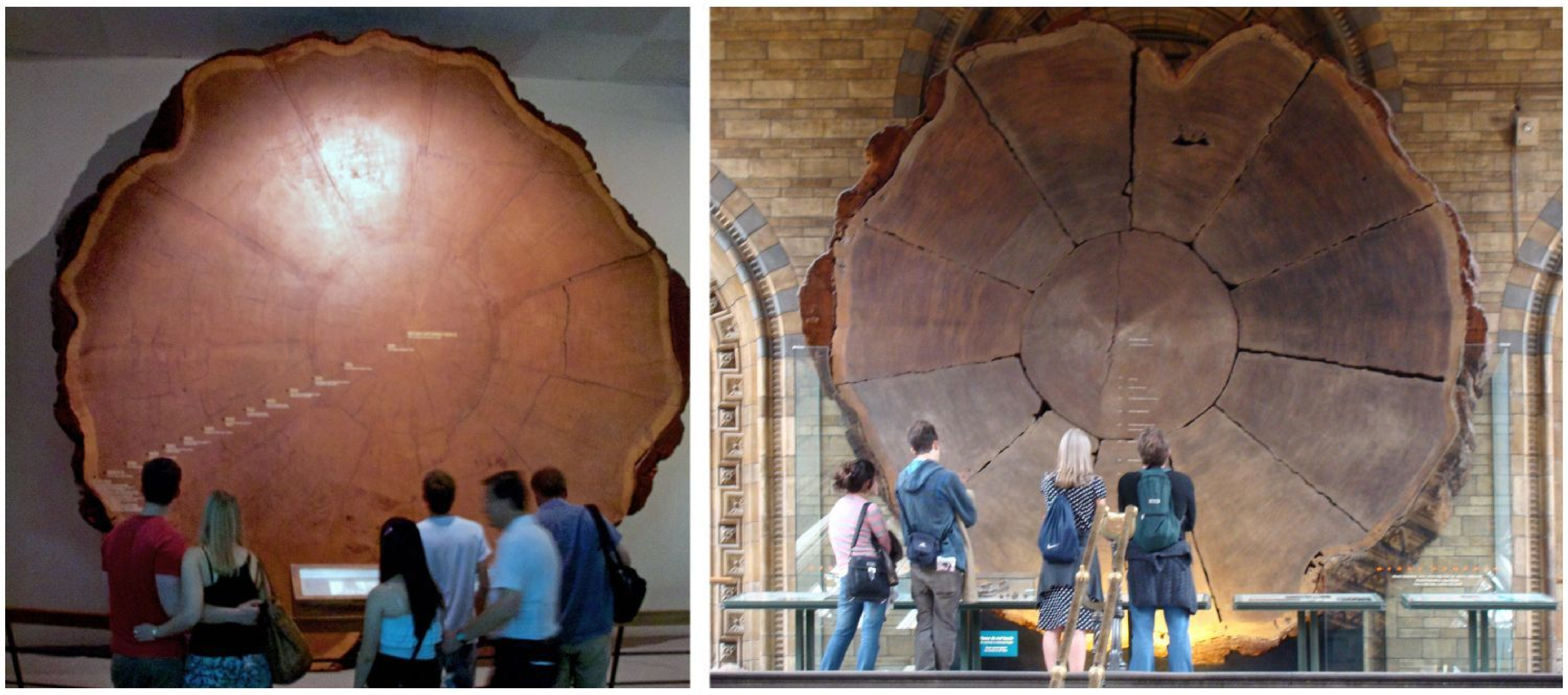
trimmed so that each one covered 50 years' worth of rings, and then analysed by the British radiocarbon lab, and again by their colleagues in Heidelberg, Germany, and Copenhagen, Denmark.

They could consider only the 1,300 years of the tree's life, but the results showed a discrepancy: for much of that time, radiocarbon underestimated the sequoia's age as indicated by its rings. This could mean only one thing. A key assumption in Libby's theory – that the amount of radiocarbon in the Earth's atmosphere was always the same – was wrong. Scientists soon realised that historic variations in atmospheric radiocarbon were not just random or cyclic, wobbling around a fixed level. It could be seen that before 2,000 years ago, the basic level itself was higher, and became increasingly so with time. A higher level of radioactive carbon in the atmosphere compared to the present, meant that it would take longer for absorbed radiocarbon in an archaeological sample to fall to the predicted amount than had the level been constant. Laboratory dates would need to be adjusted. These adjustments, which increased the calendar age of computed dates, became known as calibration. Then, as Colin Renfrew has described it, "assumptions which [had] sustained prehistoric archaeology for nearly a century" collapsed.



Above: Sections from the Mark Twain Tree, at the American Museum of Natural History, New York (left) and the Natural History Museum, London (right)

MIKE PEEL/CC-BY-SA-4.0, REPTON1X/CC BY-SA 3.0

Up to this point, carbon dating in Europe and the Near East before 1000BC – where there was most interest from archaeologists, and most argument – had two notable features. On the one hand, for most of the region, science made things older than they were thought to be, with the effect that the past became bigger by as much as 3,000 years; the various cultures and eras that archaeologists had defined had more time to grow. On the other hand, in Egypt, where there was already direct evidence for chronology in the form of ancient king lists, carbon dates seemed to point in the opposite direction – they were too young.

The first calibrations are associated with Hans Suess, an Austrian nuclear physicist and geochemist who moved to the US after the Second World War. His graphs had a dramatic impact on this already unsettling picture. First, they solved the Egyptian problem. Suitably adjusted, ancient Egyptian radiocarbon dates were seen to fall nicely into place, matching the historical record. Further north and west, where no histories had ever existed that far back, archaeologists were (mostly) starting to get used to the longer chronologies that radiocarbon dating had brought. Now it happened again: things got even older. Only this time, as Renfrew was quick to recognise, the effect was not just a surprise. It was revolutionary.

Liberating the past

Before science entered the fray, archaeologists had relied on their creative judgments to assign dates to events in European prehistory. Nineteenth-century antiquarians defined successive ages of stone, bronze and iron. The first of these could loosely be related to ice age chronologies computed by geologists (though these too involved much guesswork). The tools and weapons that characterised the metal ages could be compared to artefacts excavated around the eastern Mediterranean, where histories of sorts reached further back. Bronze daggers of similar design in England and Greece, it was supposed, showed a connection that implied synchronicity – or if, as was commonly assumed, the English design was influenced by the superior Greek version, the former might be a century or so younger than the latter.

Above: The Mark Twain giant sequoia log, felled in 1891 and photographed by CC Curtis, in what is now Kings Canyon National Park, California

It was a simple device. But worked across the complex ancient cultures of the European continent by a myriad of independent scholars, writing in a variety of languages, the result was anything but simple. The edifice of prehistoric Europe came steadily to resemble a playing-card castle decorated with turrets and flying bridges, one lost people's story propping up another's, often with little basis in sound archaeology.

Arriving at Cambridge University in the year of the sequoia drilling, Renfrew first studied natural sciences (believing that "physics was the way to understand the world"), and then archaeology – both subjects he'd become interested in at school. His research took him to the Mediterranean, where he soon came to doubt some of the prehistoric connections archaeologists had been making across Europe. And then along came radiocarbon calibration. The effects were spectacular. Suess's graphs turned a lab date of 2400BC into a calendar age of 3000BC – and the gap widened as you went further into the past.

Renfrew realised that this pushed northern Europe so far back, that the chronological links to the east favoured by traditional archaeologists finally snapped. Stonehenge, for example,

RICK GOLDWASER/WWW.FLICKR.COM/CC BY 2.0

Above: Methuselah, the oldest confirmed organism on Earth, a bristlecone pine tree in the White Mountains, California, born around 2830BC

was built not in 1600BC, but before 2000. This meant any ideas that this striking monument was contemporary with Mycenaean Greece, where archaeologists had sought the origins of the whole culture behind the stones, had to be wrong. No Greek prince had travelled to England to stir up the primitive peoples of the dark north. The plucky Brits must have done it on their own.

The earlier dating process, connecting cultures across space to the oldest known historically determined events, had led to a particular way of seeing the past: historical links didn't just date events, they explained them. Calibrated radiocarbon dates cut Europe free of that interpretive assumption. They would liberate the past.

It was more straightforward when there was no history to compare, and few strongly held archaeological chronologies built on hope. This was especially true in the Americas, where in 1950 there was still a popular perception that what happened beyond the tree ring marked 1492 was largely a matter of one long, dark mystery lit only by a few glorious civilisations, such as the Aztecs in Mexico or the Anasazi in the Southwestern United States. Within a decade radiocarbon had brought profound new insights.

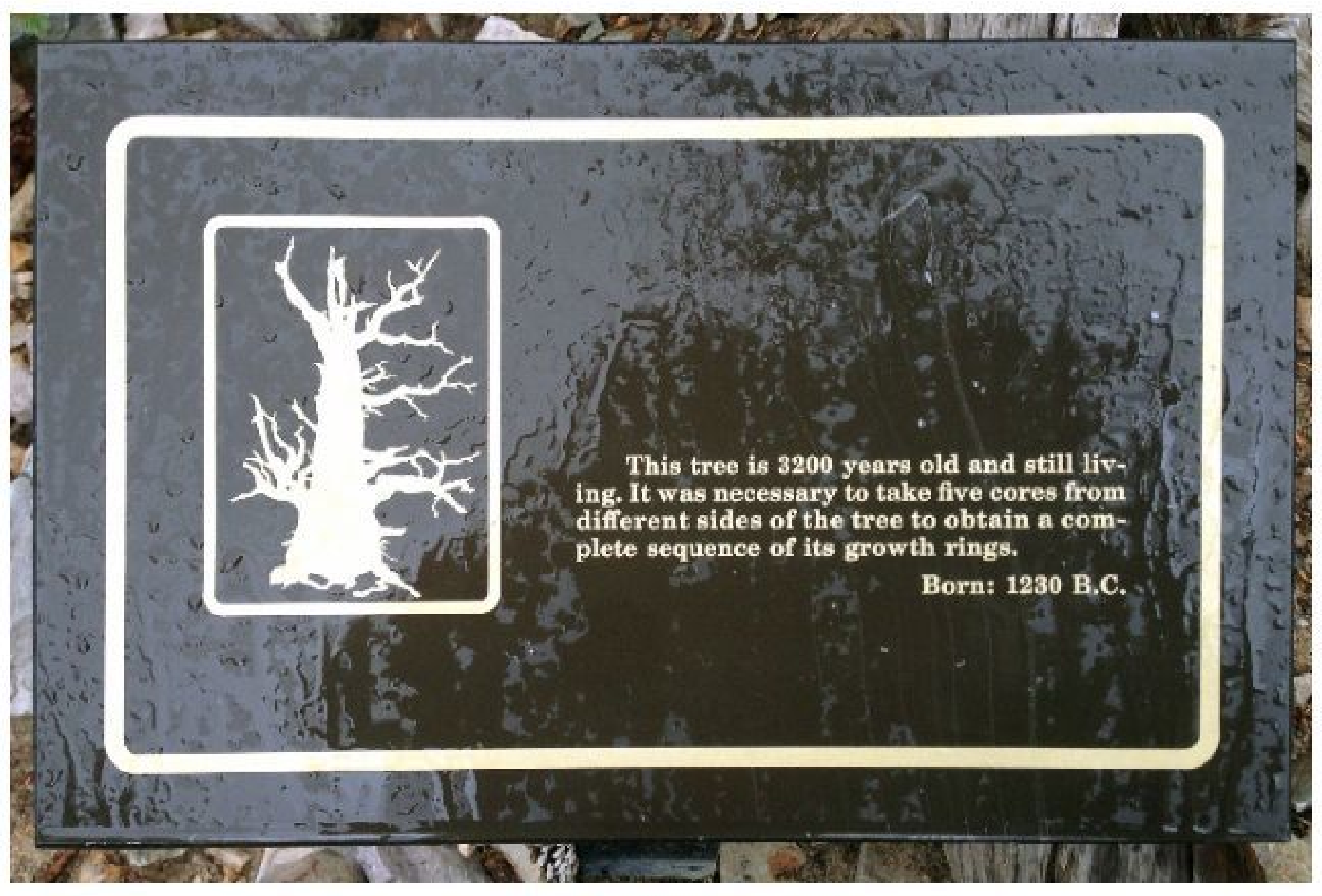
New uncertainties

One of the great questions in American archaeology was when did people first arrive? It was assumed they had walked across the Bering Strait from Russia into Alaska, when sea level was low enough to make that possible. Radiocarbon showed that was the case between 23,000BC and 9000BC (a range which has since been considerably nudged towards the older end). Two key styles of stone spear tip known as Clovis and Folsom were seen to have been made before and after 9000BC respectively. Sites across the US and Mexico where mammoth and extinct bison had been butchered by early hunters were dated to between 9000 and 5000BC. People had reached as far south as Patagonia by at least 8000BC. Today that date is close to 15,000 years.

As in Europe and Asia, everything seemed to be getting older and more complex. A move away from big game to the consumption of a wider range of localised plants, animals and fish began thousands of years earlier than had been thought – and farming in central and south America also had a much older ancestry. Sophisticated pottery in

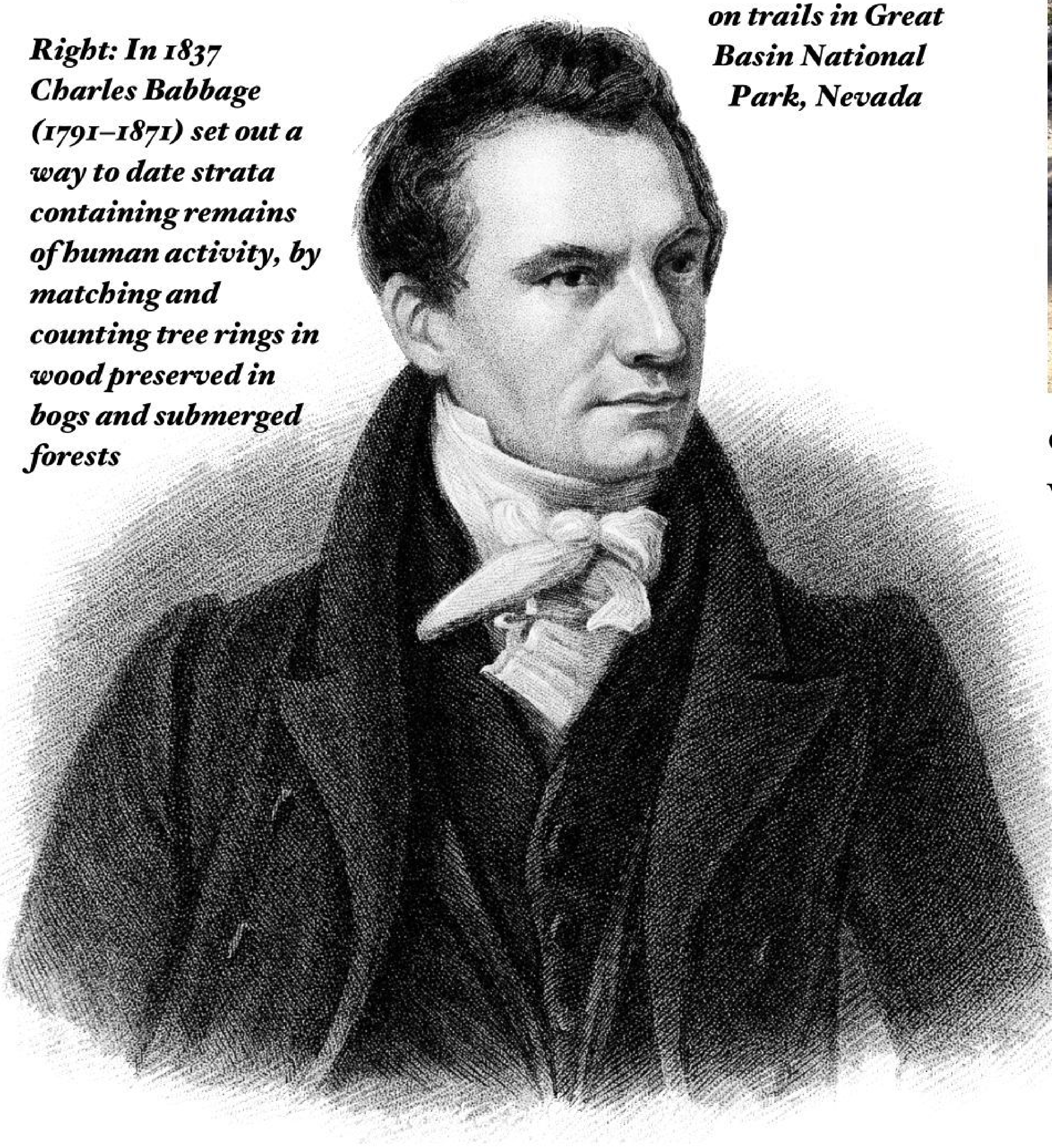
Right: More bristlecone pine on the Methuselah Trail

BRISTLECONE PINE GROVE 0.7 MI
ROCK GLACIER 1.3 MI
TERESA LAKE 0.1 MI



This tree is 3200 years old and still living. It was necessary to take five cores from different sides of the tree to obtain a complete sequence of its growth rings.
Born: 1230 B.C.

Right: Bristlecone pines can also be seen on trails in Great Basin National Park, Nevada



Right: In 1837 Charles Babbage (1791–1871) set out a way to date strata containing remains of human activity, by matching and counting tree rings in wood preserved in bogs and submerged forests

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BINCHESTER ROMAN FORT

Binchester, or Vinovia to give it its Latin name, was the largest Roman fort in County Durham and was accompanied by a very extensive civil settlement.

Displayed remains include part of the commanding officer's residence with an attached bath-building. Excavated in the 1970s the bath-building features one of the best preserved examples of a hypocaust (underfloor heating system) in the whole of Britain.

During 2018 the timber building protecting the baths was replaced by a new and more robust structure' decorated internally in the Roman style affording a much improved visitor experience. Also on display are the stupendously well-preserved remains of part of the regimental bath-building outside the fort which has walls still standing 2 metres (7 feet) above Roman floor level.

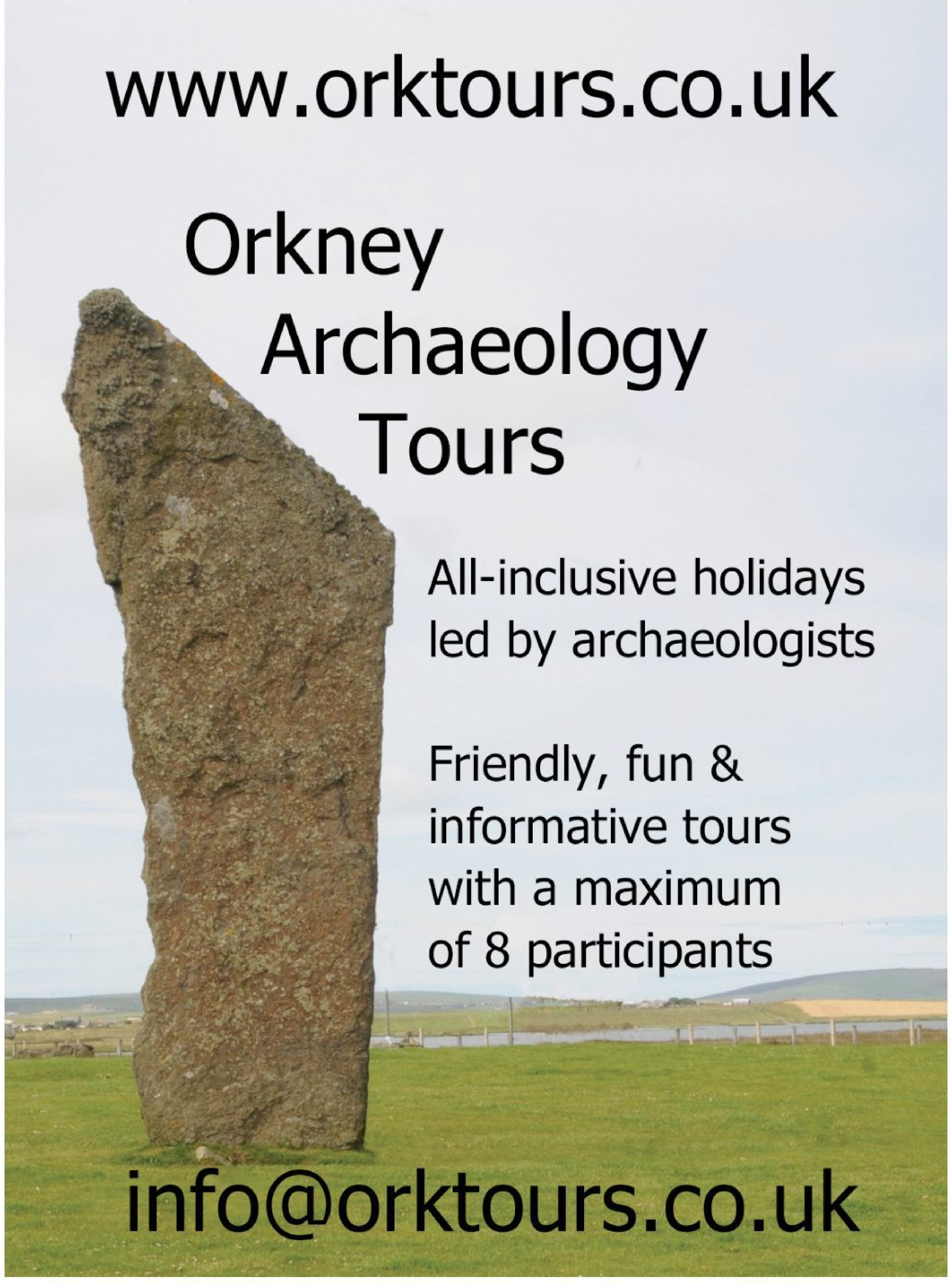
The Binchester Roman Festival takes place weekend July 13/14, repeated August 26, and features groups of re-enactors staging mock battles. Events commence 11.00am, repeated at 2.00pm. Visitors in July and August will be able to view a new excavation at the north-east gate of the fort

Location
The fort lies about 1 mile north of Bishop Auckland beside the road that runs from the town hall square to Newfield. It is signposted from A690 Durham-Crook, from A688 Spennymoor-Bishop Auckland, and from Bishop Auckland town centre. Postcode DL14 8DJ. Becuase of the sharp turn in to the access lane, coaches are strongly advised to approach from Bishop Auckland market-place via Wear Chare (turn at the Merry Monk Inn).

Facilities and restrictions
There is ample parking space for cars and coaches. The majority of the site is fully accessible and the reception building incorporates a shop selling souvenirs and a range of publications and modest refreshment facilities. The site has portaloo toilets.
Please note that only assistance dogs are allowed on site.

Opening dates and times 2019:
Monday April 1st until Thursday October 31st
Daily 10.00am-4.30pm
Entrance fees:
Adults - £5.00, concessions - £4.00, children - £3.00 (aged four and under free).
Event days: Adults - £7.00, concessions - £6.00, children - £5.00.
(we can now take card and contactless payments).
Group visits and guided tours must be booked in advance
Contact details: tel: 01388 663089. Out of season: 03000 267013.
www.durham.gov.uk/binchester

Durham County Council



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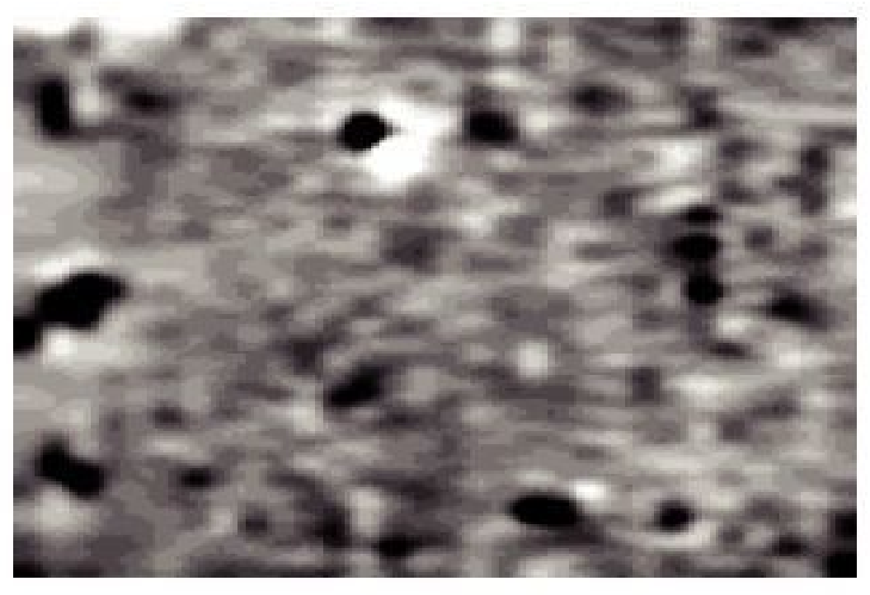

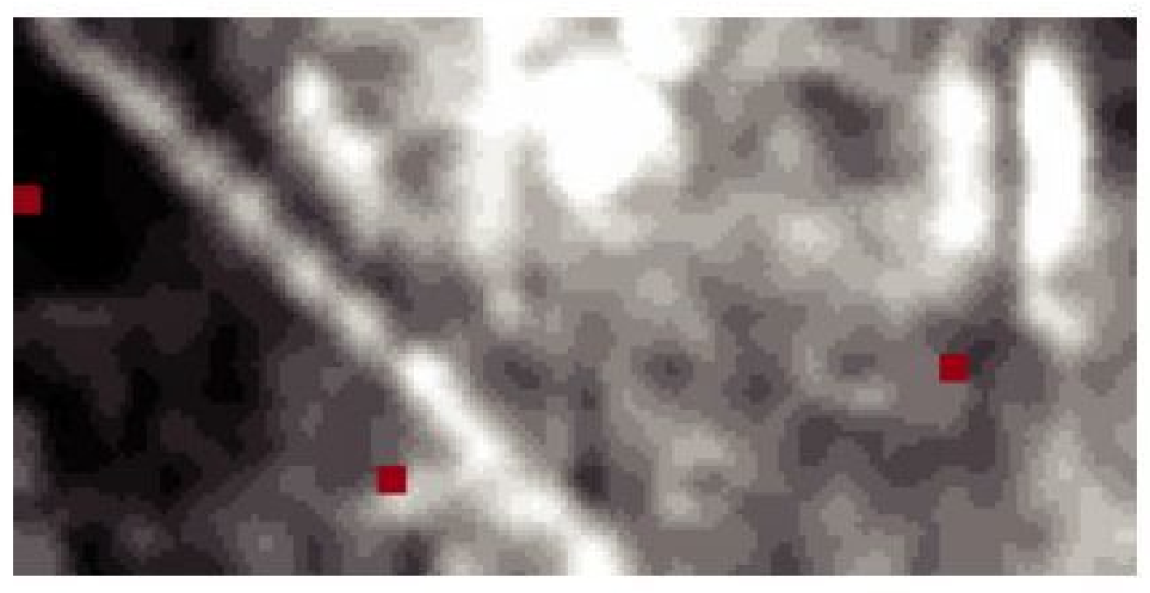

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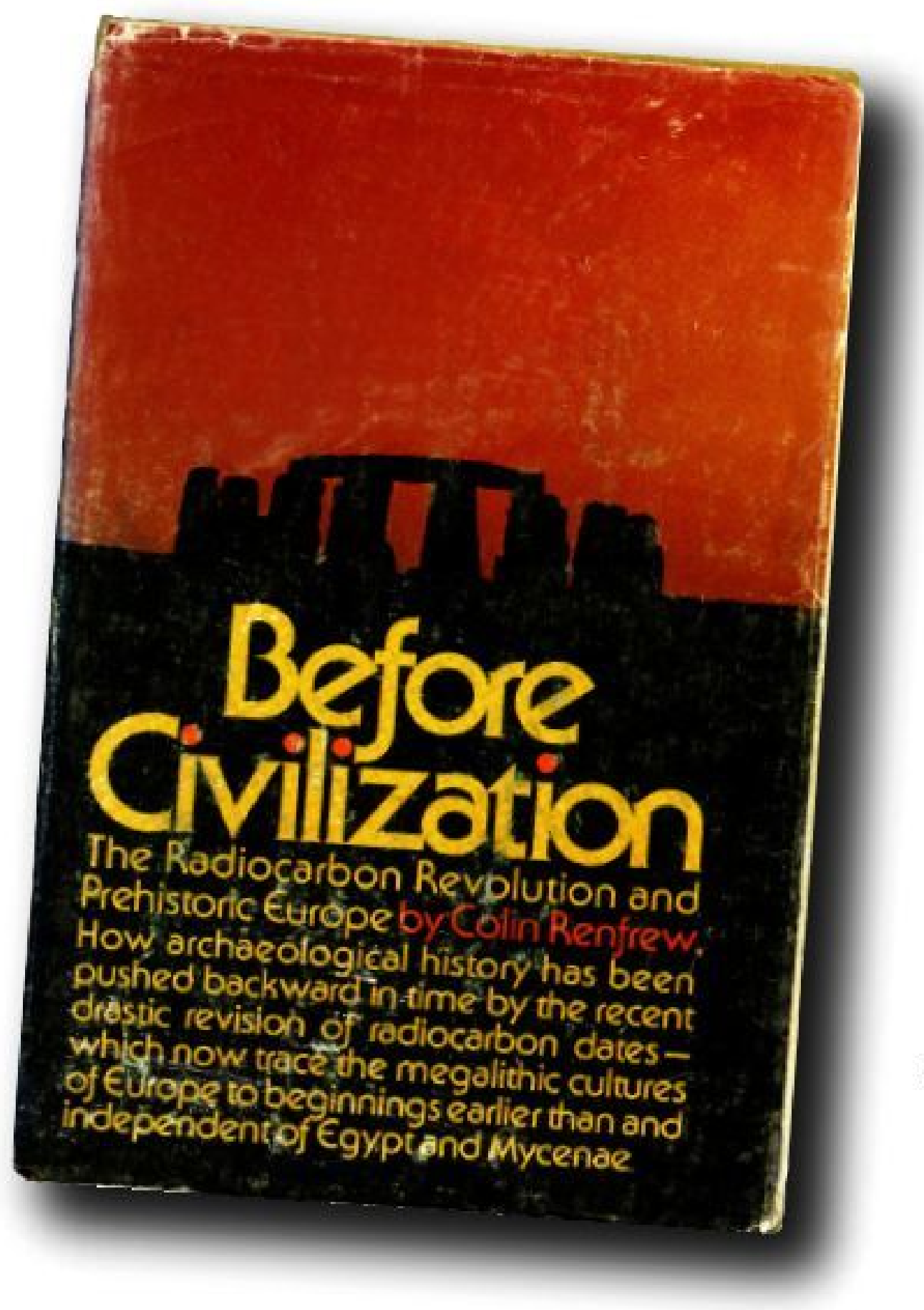
Ecuador was so old, some wondered if the tradition might have been brought over by Jomon potters from Japan – where radiocarbon was demonstrating an astonishing antiquity for this deeply human craft.

Radiocarbon's early days were marked by such revelations about big issues and famous sites. In his original experiments, Libby had dated wood from Tutankhamun's tomb. One sample in his graphs was strikingly labelled "Bible" (it was a piece of cloth wrapping from a Dead Sea scroll). Inevitably, as dates accumulated, archaeologists focussed on greater detail; and often it was in such detail that they found uncertainties.

In 1979 dates were obtained for what excavators had identified as a Roman massacre of native men, women and children. The site was a hillfort in Somerset, South Cadbury Castle, and the event was said to have occurred during Boudica's doomed revolt in AD61. By marshalling everything that unsettled archaeologists at the time about radiocarbon dating – a revised half-life, competing calibration curves and wide standard deviations – it proved possible to show that ten dated samples failed to get anywhere close to finding the massacre's "true" date. "Even if a large number of seemingly reliable samples are analysed," the scientists concluded mournfully, "it is normally beyond the scope of radiocarbon dating to define absolute archaeological timescales to better than within several centuries." Later one of the authors of this study blamed some of the "unaccounted-for sources of error" on "atmospheric dust or dandruff". Fortunately for Libby, at least in this respect, he seems to have started to lose his hair at a young age.

Even as they wrote, however, developments were underway that would not only prove the judgment wrong, but direct the problem at archaeology, not science. That story, as wonderful as the one that came before and still controversial, is for another article. Willard Libby would have known about and understood the new technical ideas, and the basic tool behind them. But he was not to see them play out. He died in 1980. As he lay down his Geiger counter for the last time, around the world, it was estimated, were already 50,000 radiocarbon dates. In 2014 it was thought there might be a million – and perhaps two million by 2020. We're still counting.

Mike Pitts edits British Archaeology ■


Before Civilization
The Radiocarbon Revolution and Prehistoric Europe by Colin Renfrew.
How archaeological history has been pushed backward in time by the recent drastic revision of radiocarbon dates – which now trace the megalithic cultures of Europe to beginnings earlier than and independent of Egypt and Mycenae

Above: Bog oaks raised from Woodwalton Fen, Cambridgeshire

Right: Stumps of a submerged forest on Borth sands, Ynyslas, Ceredigion; pine, alder, oak and birch were growing in the Neolithic and Bronze Age up to 5,000 years ago

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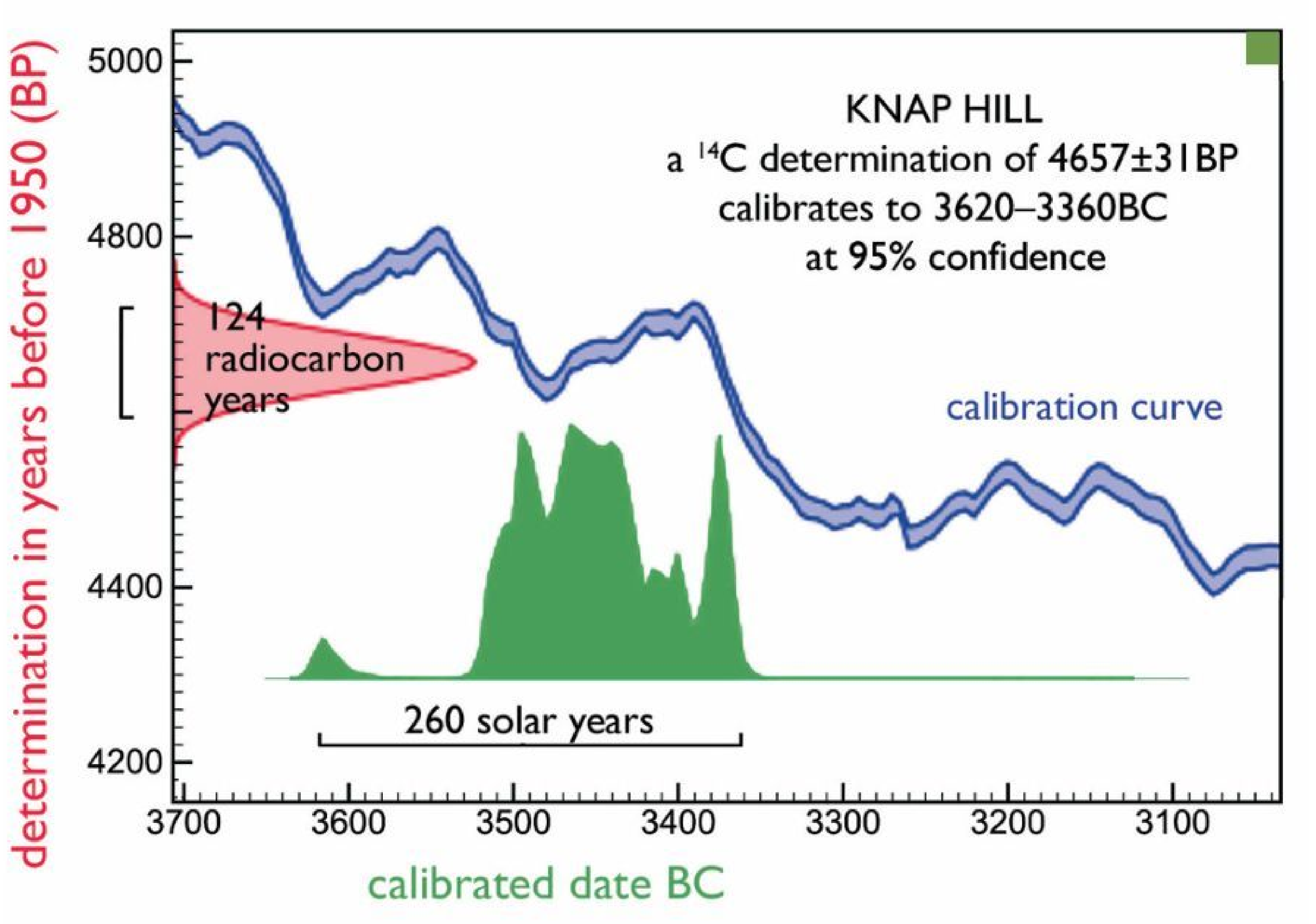
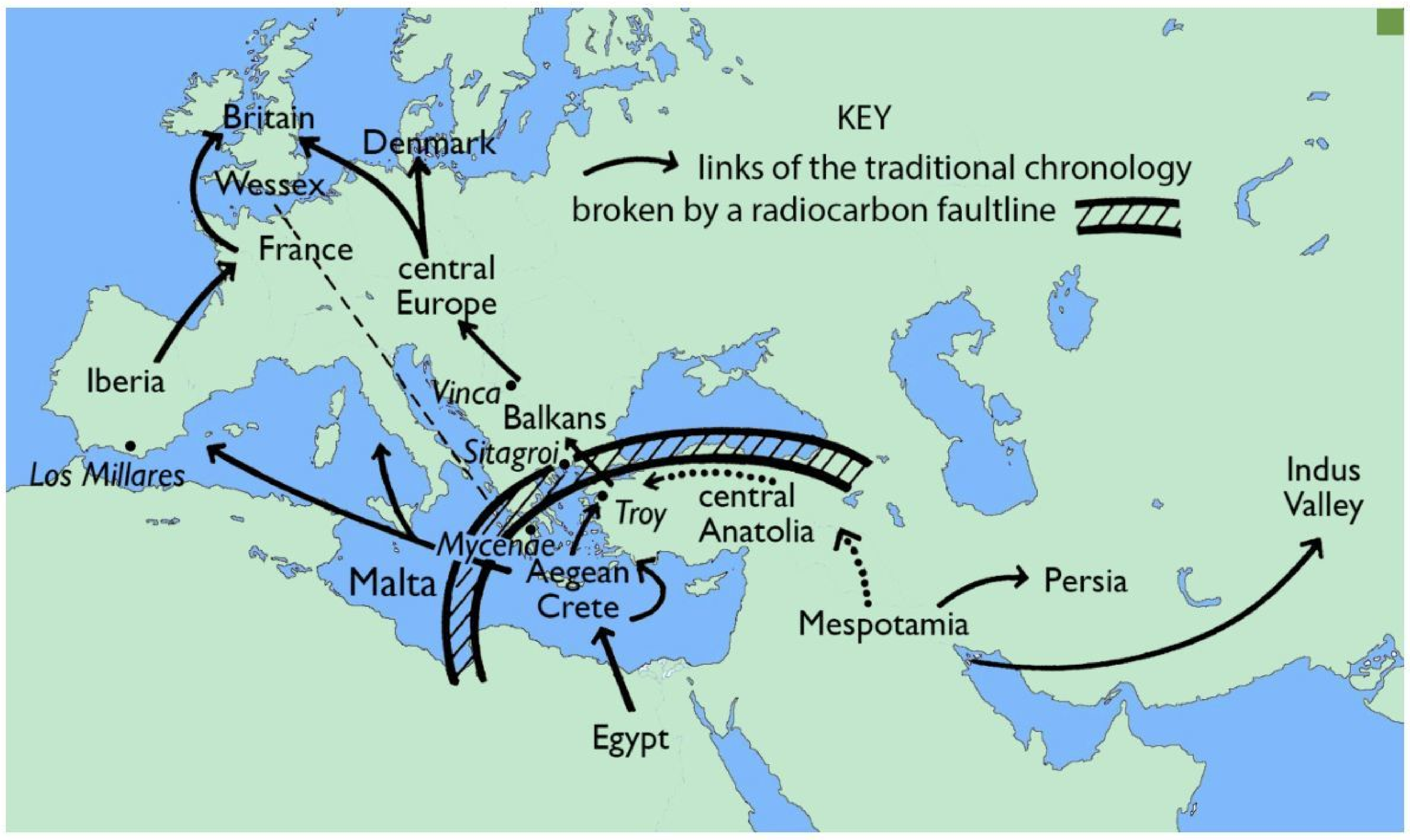


Right: Graph for a calibrated radiocarbon date (from a Neolithic site in Wiltshire) produced by OxCal, an online program created by Christopher Ramsey at the Oxford Radiocarbon Accelerator Unit; the original date of 4657BP (c 2700BC) calibrates to around 3500BC, some eight centuries older, with a wider standard deviation

Above: Hans Suess (1909–93), a pioneer in the science of radiocarbon calibration


KEY
links of the traditional chronology
broken by a radiocarbon faultline
Britain
Denmark
Wessex
France
central Europe
Iberia
Los Millares
Vinca
Balkans
Sitagroi
Troy
central Anatolia
Mycenae
Malta
Aegean
Crete
Mespotamia
Persia
Indus Valley
Egypt

Right: In Before Civilisation (1973) Colin Renfrew argued that calibration of radiocarbon dates created a "chronological fault line" in prehistoric Europe, revealing that Bronze Age cultures in the north and west once thought to be contemporary with particular cultures around the Aegean were in fact older

WHITTLE/HEALY/BAYLISS/CBA, RENFREW 1973/CBA

Surveyors of the Fabric of Westminster Abbey, 1906–1973: Reports & Letters

ed Christine Reynolds
Boydell Press May 2019
£60 pp385 hb ISBN 9781783274208
Reviewed by Warwick Rodwell

Great buildings like Westminster Abbey undergo continuous programmes of repair and refurbishment, the physical consequences of which contribute to their structural and decorative history. All surviving relevant documents are of crucial interest to the archaeologist for understanding what was done, when and by whom. Westminster Abbey holds a large archive of reports, letters and drawings by its successive surveyors of the fabric which provide, in varying detail, accounts of works proposed and undertaken. Christine Reynolds, assistant keeper of the muniments, has an encyclopaedic knowledge of these documents and has meticulously transcribed and edited them. Her first volume (2011) covered the period 1827–1906; now we have the second, for 1906–73, with an excellent introduction by Ptolemy Dean, the current surveyor of the fabric.

The volume spans four surveyorships: WR Lethaby, Sir Walter Tapper, Sir Charles Peers and SE Dykes Bower. Lethaby (1906–28) was a scholar who understood archaeology and published two seminal volumes on the abbey's architectural history. Tapper (1928–35) designed the present working library and supervised continuous programmes of structural repair. His reports also noted archaeological discoveries, such as early Norman foundations under the nave floor, and a north-south orientated stone coffin beneath the infirmary hall.

Peers (1935–51) was a major figure in British archaeology and architectural history, having been the first chief inspector of ancient monuments. As a conservationist, he continued with the abbey's careful repair, but was constrained by the onset of the Second World War, when he had to organise the protection of the abbey's treasures, and deal with the consequences of the innumerable incendiary bombs that descended upon it. He had the Coronation Chair walled up in the crypt of Gloucester Cathedral, and buried the Stone of Scone in a vault under the abbey, the location of which was known only to himself, the dean and the prime minister of Canada.

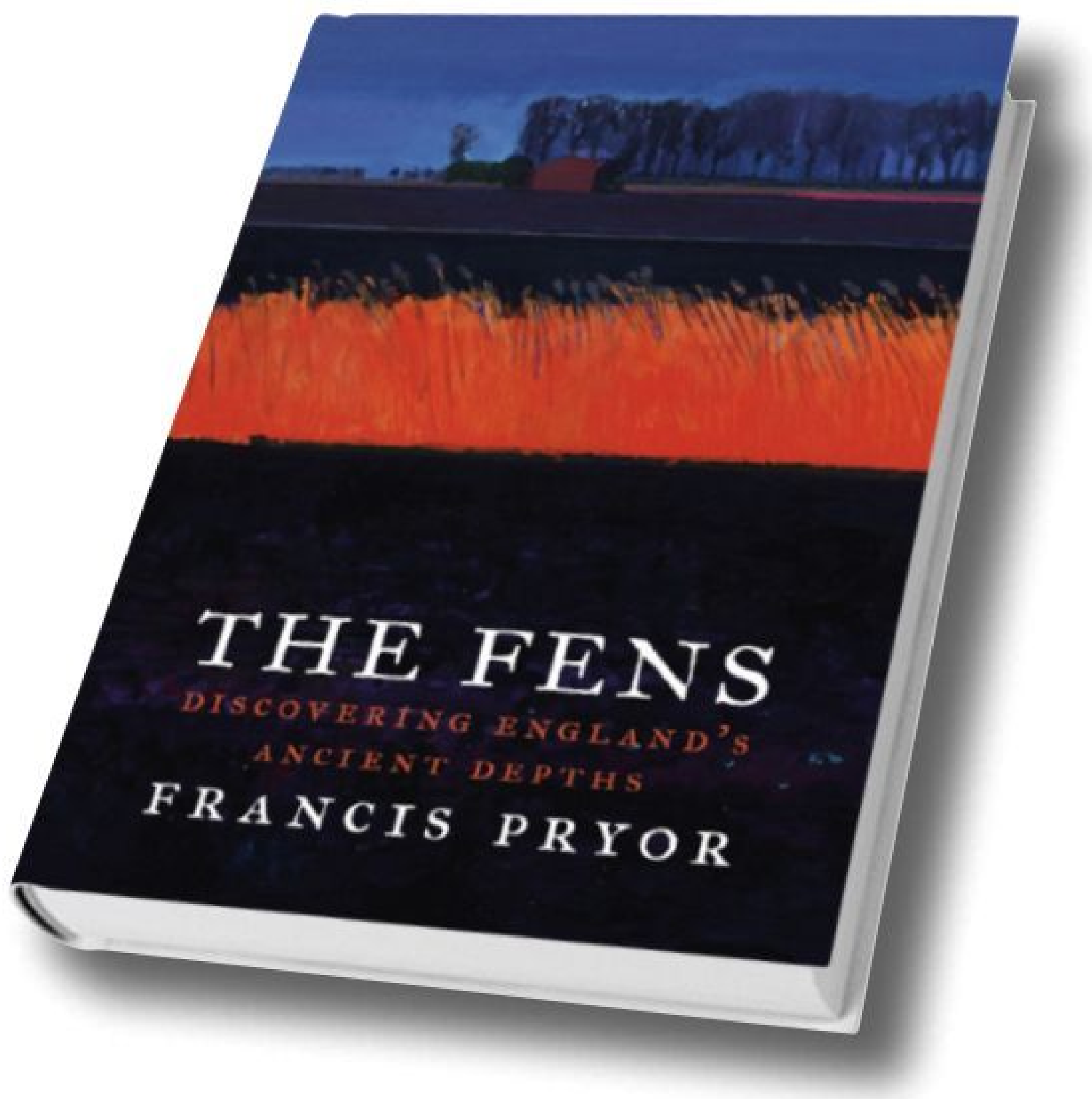
The next surveyor, Dykes Bower (1951–73) was the antithesis of Peers: vehemently anti-conservation, he brooked no interference from scholars, and proudly said so in his voluminous reports and correspondence. He destroyed all Henry III's great oak roofs, refusing to repair them; he rebuilt Britain's only surviving pre-Reformation shrine canopy, so that it now appears entirely modern; he condemned the medieval Cosmati pavements for their shabbiness, and wanted to renew them, to resemble many in Italy, which he described as being in "wonderful preservation"; and when he was thwarted from destroying the entire nave floor and replacing it with an incongruous marble pavement of Italianate design, he wrote a vilification of conservation. Those were the darkest days for the abbey's archaeology since the Dissolution.

Miss Reynolds has put us all in her debt by editing this invaluable series of documents that so powerfully illuminates the history of works on Westminster Abbey.

Warwick Rodwell is consultant archaeologist at Westminster Abbey

The Fens: Discovering England's Ancient Depths

by Francis Pryor
Head of Zeus Jul 2019
£25 pp458 hb ISBN 9781786692221
Reviewed by Mike Pitts



Francis Pryor has an enthusiastic verbal energy that will be known to many, through his appearances on TV and radio, his books and his blog, *Francis Pryor – In the Long Run*. *The Fens*, which I count as his 14th trade book (including two novels), falls into a group that tell archaeological and historical narratives of British landscape history between the Mesolithic and the present. His energy sometimes overflows into repetition, and, as with other books, there are anecdotes and excavations in this new one that he has told before. But Pryor always writes well and entertainingly, and in *The Fens* he has created what should become one of his most lasting works, a personal, archaeological celebration of a region where he has family roots and where he conducted a lifetime's fieldwork – and where he raises sheep – and that he loves.

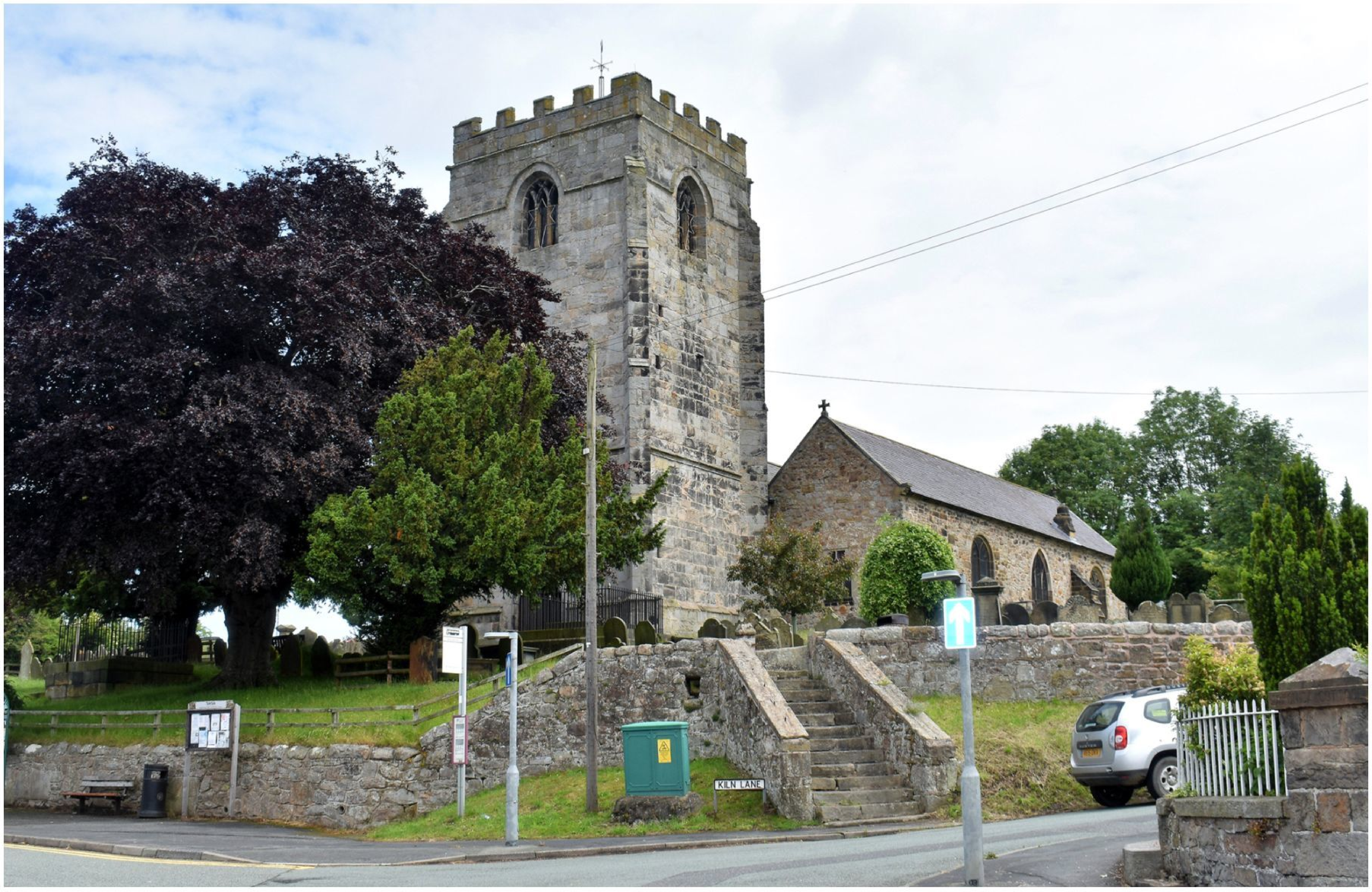
In 18 chapters he combines descriptions of excavations and surveys by himself and colleagues with wider stories of change in settlement and landscape. Such is his record he is able, by and large, to do this as a personal narrative too, as he digs his way through ancient history from Neolithic Etton to Iron Age Fengate and beyond; in one striking scene Maisie Taylor, his wife, finds medieval tally sticks in King's Lynn, notched strips of wood recording ships' cargoes. As we near the present the device fades a little, and with few excavations risks becoming a travel diary of churches, windmills and fish shops. But it remains interesting and convincing to the end, and is an important contribution to the literature of eastern England.

Archaeologists are not his target readership, but the stories of an experienced field practitioner will resonate with other professionals, and Pryor understands research and ideas in a way only an archaeologist could. Some may challenge his belief that "people in the distant past were no different from us". His insistence on continuity, from Mesolithic hunters learning to farm to Bronze Age carpentry skills expressed in medieval cathedrals, is vulnerable to aDNA studies which are revealing unimagined population complexities. Nonetheless, I'd recommend this book to archaeologists – for both the story Pryor tells and the way he tells it. ■

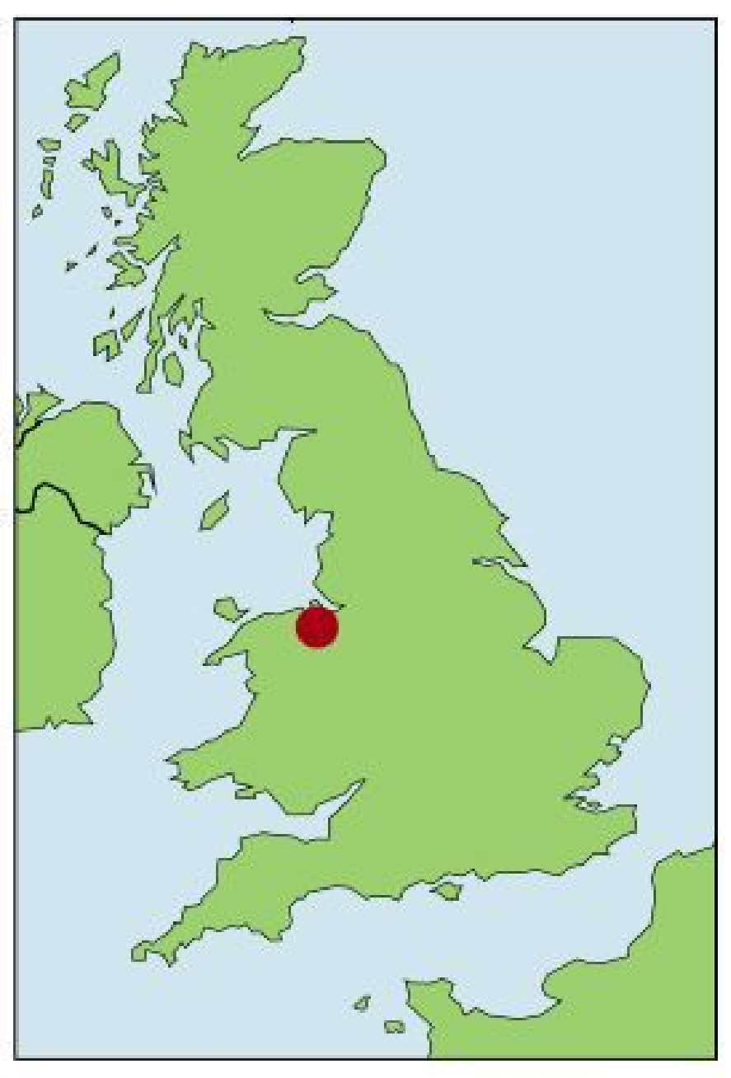
Mike Pitts edits British Archaeology

Cyllene Griffiths, director, Council for British Archaeology Wales, presents examples of listed buildings casework from the council's files

45. Hope Parish Church, Flintshire



C GRIFFITHS



Hope's parish church is set in a large circular enclosure (a typical Celtic Llan) in the centre of a small village near Wrexham. It's dedicated to the fifth-century St Cynfach and the sixth-century St Cyngar, but is thought to have been founded in early medieval times, with the original timber construction being replaced with masonry by its first mention in 1254.

It is a grade I listed building. Its many features of archaeological and architectural interest include part of an early sepulchral slab with incised Celtic cross, 15th-century stained glass, an impressive seven-bay collar truss roof of around 1500, some rare 16th-century wall paintings and a fine octagonal Jacobean pulpit. It was extensively restored in 1859 and again, by J Oldrid Scott (son of Sir George Gilbert Scott), in 1884–85.

Before the Scott restoration, according to *The History of the Diocese of St Asaph* by the Venerable DR Thomas (1908), "The Churchwarden's boxes rose majestically to the height of seven feet [2m], and some large holes cut in the front through which the head might be emerged were the only means by which the occupants could obtain a satisfactory view of the outer world."

The wall paintings were reported in the local paper as being discovered during restoration works in 1953. This work is thought to have revealed a date of 1533 on one of the roundels, presumably associated with reconstruction work undertaken by Lord Stanley (3rd Earl of Derby) who also reputably built the "particularly fine" tower.

Under the ecclesiastical exemption (see Casefiles, St Catherine's Church, Pontypridd, Nov/Dec 2017/157), the CBA received a faculty application for works to conserve the wall paintings, and was pleased to support the opportunity to conserve these fascinating and rare – in Wales – examples and to better present them to the public. The aims of the project, put together by the Friends of Hope Church, were to clean and conserve the paintings, to improve their appearance and ensure they are stable for the future, and possibly to enable identification of the texts and the sequencing of the schemes.

The paintings consist of two in situ coloured roundels with Gothic style lettering located high on the arcade facing into the nave of the church, and a number of separate fragments presented in a boxed frame. These fragments are noted in the 1953 newspaper report as part of a "Large Saint… [discovered] in the corner of the tower arch and opposite the Norman doorway leading to the vestry", said to be "about ten feet high [3m]" and thought to be St Christopher. Unfortunately, the painting was in very poor condition because of a damp wall and past restoration. The fragments were "collected and pieced together and cemented to a wall for preservation".

Andrea Kirkham, a specialist wall-painting conservator, inspected the site in support of the application for works. She concluded that the date of 1533 was unlikely for the paintings, preferring a post-Reformation origin. From the initial inspection she describes the paintings in some detail:

"Two irregular-shaped areas of post-Reformation text survive on the arcade facing into the nave. A palimpsest of layers survive in each area, at least two, possibly three, schemes. The layers will be much clearer when a scaffold

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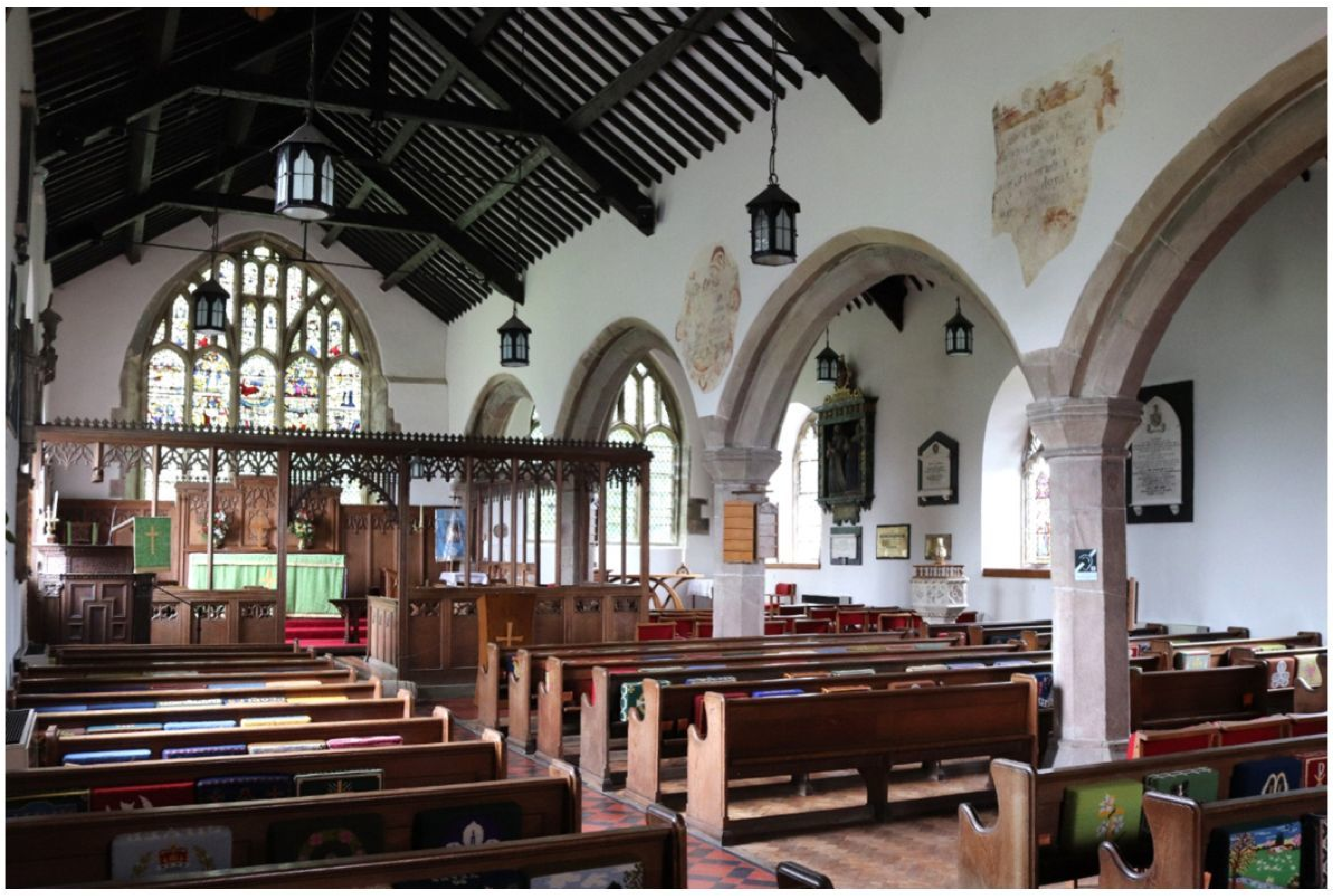
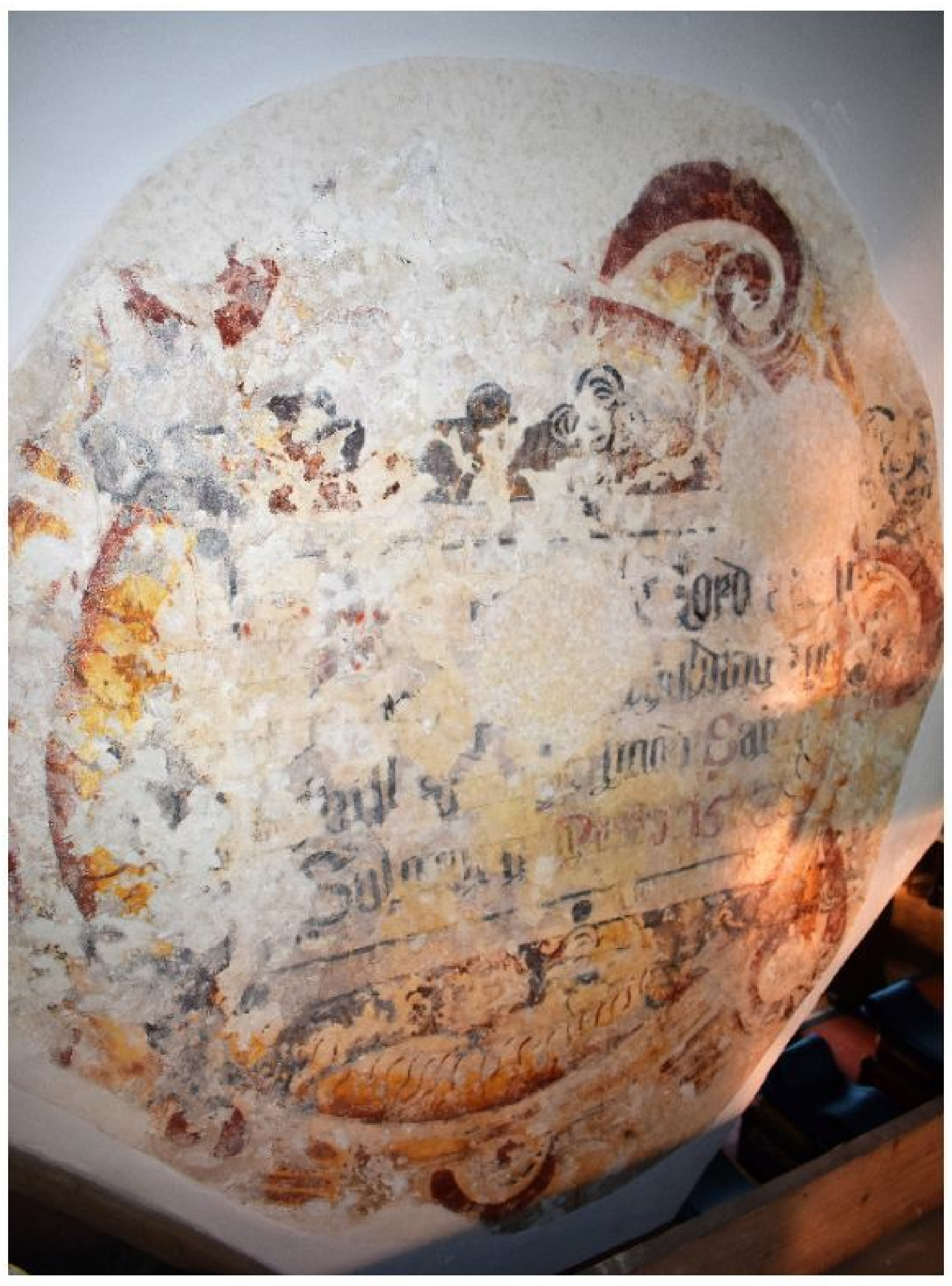
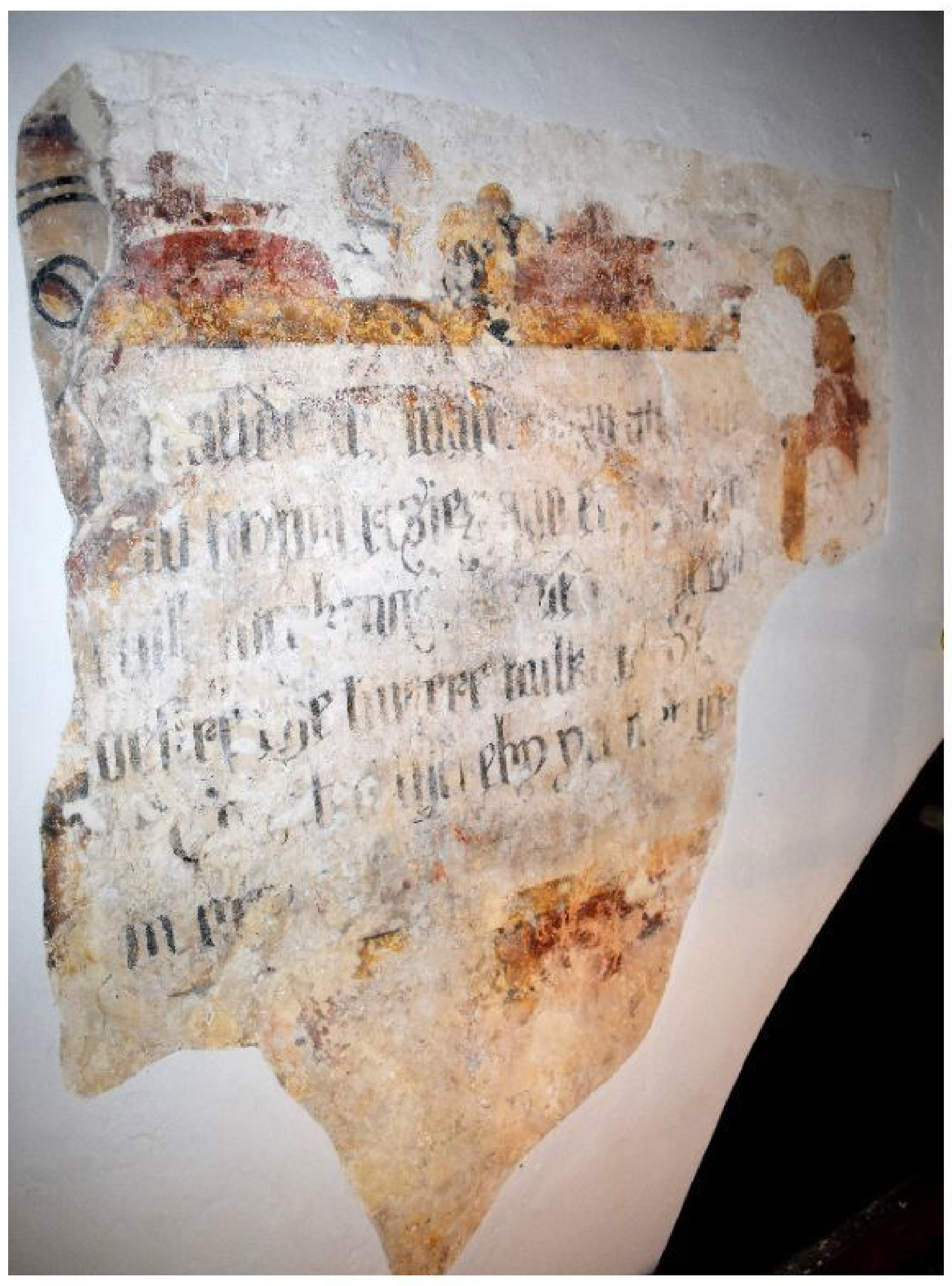






Right: The conserved paintings on the south wall of the church nave

ALLAN POYNTON, C GRIFFITHS (3)

is available and conservation work is carried out. Text A is further east than B. One phase consisted of texts in roundels with exuberant scrollwork in red and yellow ochre, as in text A. Lettering is in black with rubricated initials. Parallel lines have been drawn to register the lettering. Further west is an oblong shaped text (B) also with a frame in red and yellow ochre. Lettering is in black. A segment of the earlier roundel can be seen beneath the lettering. Probably both schemes are c17th.”

Extensive conservation works to the building in 2000 mean that the structure is now stable and dry, enabling conservation of the paintings. They had been difficult to “read” and were heavily discoloured due to the application of a surface coating of wax, probably an early attempt at preservation, and the muddle of different layers of overpainting. There were some localised areas of detachment, movement and hollow sounding plaster, inappropriate modern plaster repairs and drips of white paint from modern painting of other areas of the church. The “St Christopher” fragments were “in appalling condition… [and] scarcely decipherable”.

Five samples were taken for paint analysis: three from text A and two from the “St Christopher” fragments. The analysis of the paint from the text identified a pigment range which includes carbon black, red ochre, yellow ochre and red lead. A mix of red lead and vermilion was used for a rubricated letter in text A.

The analysis identified that “all the paintings are in a secco technique, that is, pigments are bound in a medium and applied to dry plaster. The pigments used to paint the texts were probably mixed in an aqueous-based medium and carried on a lime and sand plaster. Limewash grounds separate the paint layers and provide a bright white surface for the new scheme.”

The faculty was granted, and works have been carried out over the course of several weeks. The results have been quite outstanding. The recording by the Royal Commission notes the texts as illegible, but cleaning and conservation have successfully revealed more text and made it far more easy to read. A likely identification can now be made to biblical quotes:

“… [Lay] aside all mali… and all… and hypocrisies and… en… evil speaking… desire the sincere milk… thereby…“

is from *1 Peter* 2:1–2: “Wherefore laying aside all malice, and all guile, and hypocrisies, and envies, and all evil speakings, As newborn babes, desire the sincere milk of the word, that ye may grow thereby”, and

“… Lord… the evil and the good Saith… Solomon… Prov…”

is from *Proverbs* 15.3: “The eyes of the Lord are in every place, Beholding the evil and the good.”

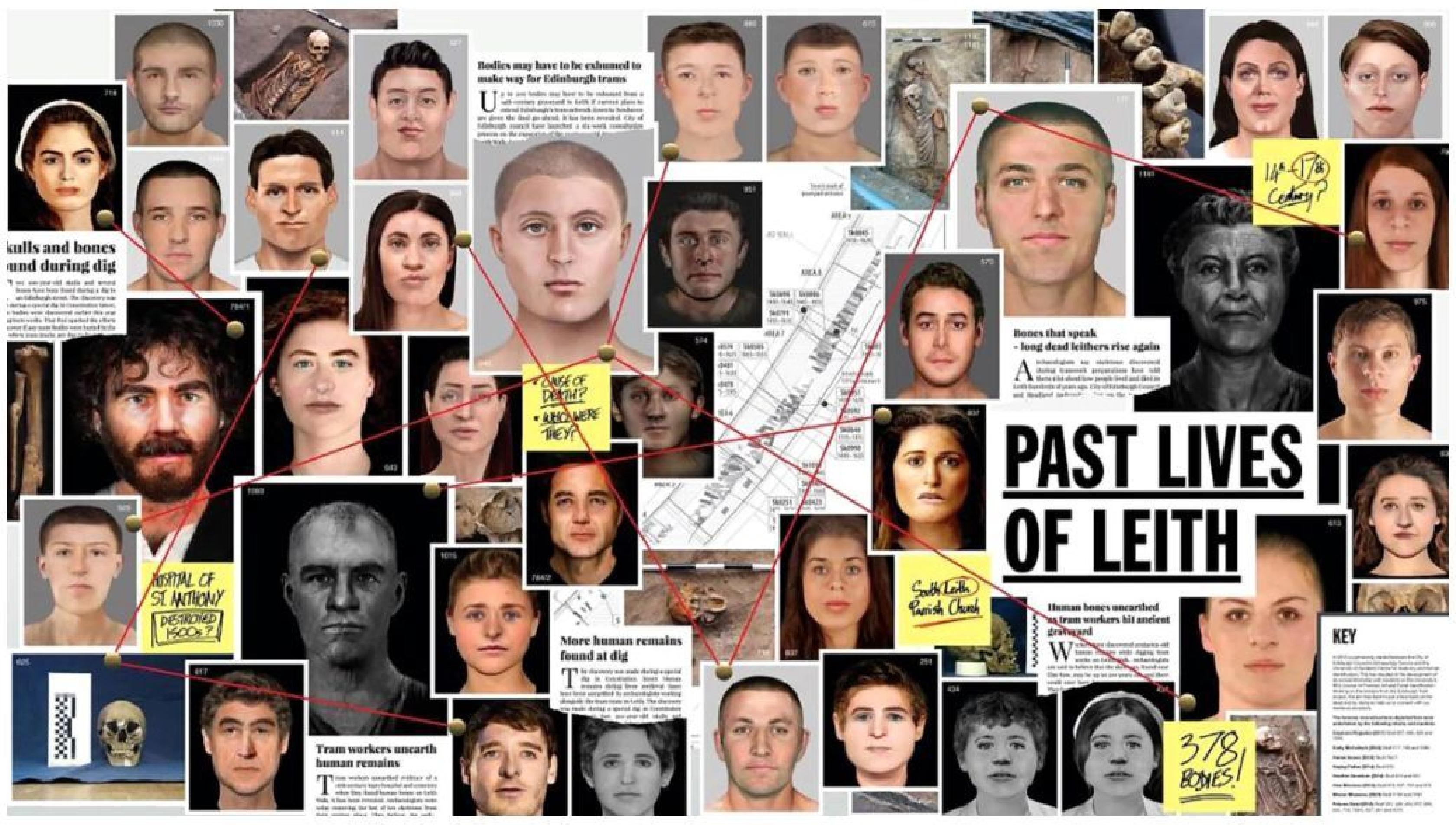
As archaeologists, we recognise the significance of this conservation project – we can perhaps imagine the richness of the crowded interior with a now mostly literate population reading the teachings on the walls, and imagine their reactions and sentiments, giving us a unique insight into the post-Reformation world and a strong sense of connection to its society. The Friends’ next project for new interpretation about the paintings will allow visitors to Hope parish church gain a new understanding of the building’s history, and make their own connections with the people of the past. ■

Below: Conservator Andrea Kirkham (second from left) with Friends of Hope Church and the “St Christopher” fragments

Council for British Archaeology

Briefing

Additional events and courses online: www.britisharchaeology.org/briefing



Original plans for the Edinburgh Tram included a line down Constitution Street. The proposal has recently been revived, but in 2009, anticipating construction, archaeologists excavated a strip of road where the route passes South Leith parish church. It transpired that the road had been laid over the eastern edge of the graveyard, now hidden behind a high wall, and the remains of 378 people were recovered dating from the 14th to the mid-17th centuries. Headland Archaeology has now published a detailed analysis of the site. Cemetery excavations are not uncommon, if challenging to complete, but this one is distinguished by a unique project with students at the Centre for Anatomy & Human Identification at the University of Dundee, who created many facial reconstructions. They can be seen in "Past Lives of Leith" in the **Museum of Edinburgh** until October 6

Fieldwork

The CBA cannot accept responsibility for operating conditions of projects.

The Newbarns Project

01.07-20.09.19, Dumfries & Galloway

Excavation and research of prehistoric village complex. All ages and fitness welcome. Students and under 16s subject to conditions. Experienced diggers welcome. New applicants to send CV. Contact Project Director: Email: e.penman2012@btinternet.com Web: https://tinyurl.com/ydc59mxu

Oakclan Forge - Volunteers

15.07-27.08.19, various locations

The forge is a portable period repoussé workshop that travels around the country, set up within the craft field. As a volunteer you will be part of a crew of 4-7. You will be trained in basic techniques by Simon Summers to go on and assist in summer workshops around England. Applicants must be committed, with a patient, calm, helpful and friendly nature. Helpful to be able to cook a meal (on an open fire). Strong interest in Iron Age/Celtic culture and crafts, be practical and have some artistic or creative ability. Email: simonblacksmith@hotmail.co.uk Tel: 07791511941

Piddington Roman Villa Excavations

27.07-25.08.19, Piddington, Northants

42nd season of excavation by the Upper Nene Archaeological Society, of a late Iron Age settlement and Roman villa at Piddington, Northants. Excavation is currently focussed on superimposed structures on the approach to the villa. Volunteers (16+) required with some previous excavation experience. Fees: from £25 pw; campsite, with basic facilities, refreshments and cooked lunches available. Full details from Diana Friendship-Taylor, email: dianaf-t@hotmail.com. 01604 870312

Sherwood Forest Archaeological Training Fieldschool 2019

12-16.08.19; 19-23.08.19, King John's Palace, Sherwood Forest

This is a 'Training Field School' where you will learn about all aspects of archaeological excavation from archaeological professionals in the heart of Sherwood Forest. This course is suitable for all levels from beginner to experienced digger. You will receive training and experience in many techniques, including The Core Skills of the Archaeological Skills Passport, plus many higher level archaeological techniques that make up the Secondary Skills of the Archaeology Skills Passport. Price £250 per person. Everyone is welcome… no previous knowledge or experience is required. To book: https://tinyurl.com/y8cowlp7

Rampart Scotland

5-16.08.19, Battle Hill Huntly

Help explore a newly discovered Iron age hillfort, Neolithic cairn and Pictish structure. All welcome, costs £800 (includes food and accommodation) with potential for part time options. For more details contact Dr Murray Cook on info@rampartscotland.co.uk

Archaeology Field School at Strata Florida

13.08.-23.09.19, Strata Florida Abbey, Ceredigion, Wales

The Strata Florida Archaeology Field School will open its doors (and trenches) for the very first time. This is a unique opportunity for people young and old, from different backgrounds, with and without experience of archaeology to take part in all aspects of an archaeological excavation at this important historical site. The field school is being delivered by the Strata Florida Trust in partnership with The Prince's Foundation, Allchurches Trust, University of Wales Trinity St. David, Breaking Ground Heritage and the Sacred Landscapes Research Project. For all enquiries, please contact: Marcus Stanton, marcus@marcusstanton.co.uk. Tel: 07900 891287. or Helen Whitear, Tel: 01974 831501. helen.whitear@btinternet.com.

Bainbridge Archaeological Training Excavation 2019

Week 1: 09-13.09.19; Week 2: 16-20.09.19, Bainbridge, Wensleydale

Join Mercian Archaeological Services CIC in the Yorkshire Dales for a week-long training excavation, which focuses on the teaching of archaeological excavation methods. As well as offering the very best in archaeological training and support, this excavation is tailored towards the requirements of the Archaeological Skills Passport. Cost: £120. For further information and booking details please follow this link: https://tinyurl.com/yx8k67fp

Liss Archaeology: Colemore Project

19.09-14.10.19, Colemore, 42 Furze Hill Road, NE Hampshire GU35 8HA (site closed on Wednesdays)

Set in South Downs National Park, halfway between Alton and Petersfield, little was known about the site until the landowner discovered some Romano-British pottery. The September/October excavation target will be determined upon the results of the spring excavation, a large trench is planned. Training is available in all aspects of archaeology, all skills levels and volunteers from all walks of life are welcome to take part. From 18 to 80s, all abilities. Taster days available. Membership (£15.00 per annum, due 31.03, students half price) is required for insurance purposes. Further details on www.lissarchaeology.uk. Dig fees £6 per day (student's half price), payable in advance.

CBA Network

CBA East

IP conference centre, Ipswich 28.09.19

Recent Archaeology in East of England: A conference celebrating 75 years of the CBA. £20 members/£25 non members http://cbae.archaeologyuk.org/events

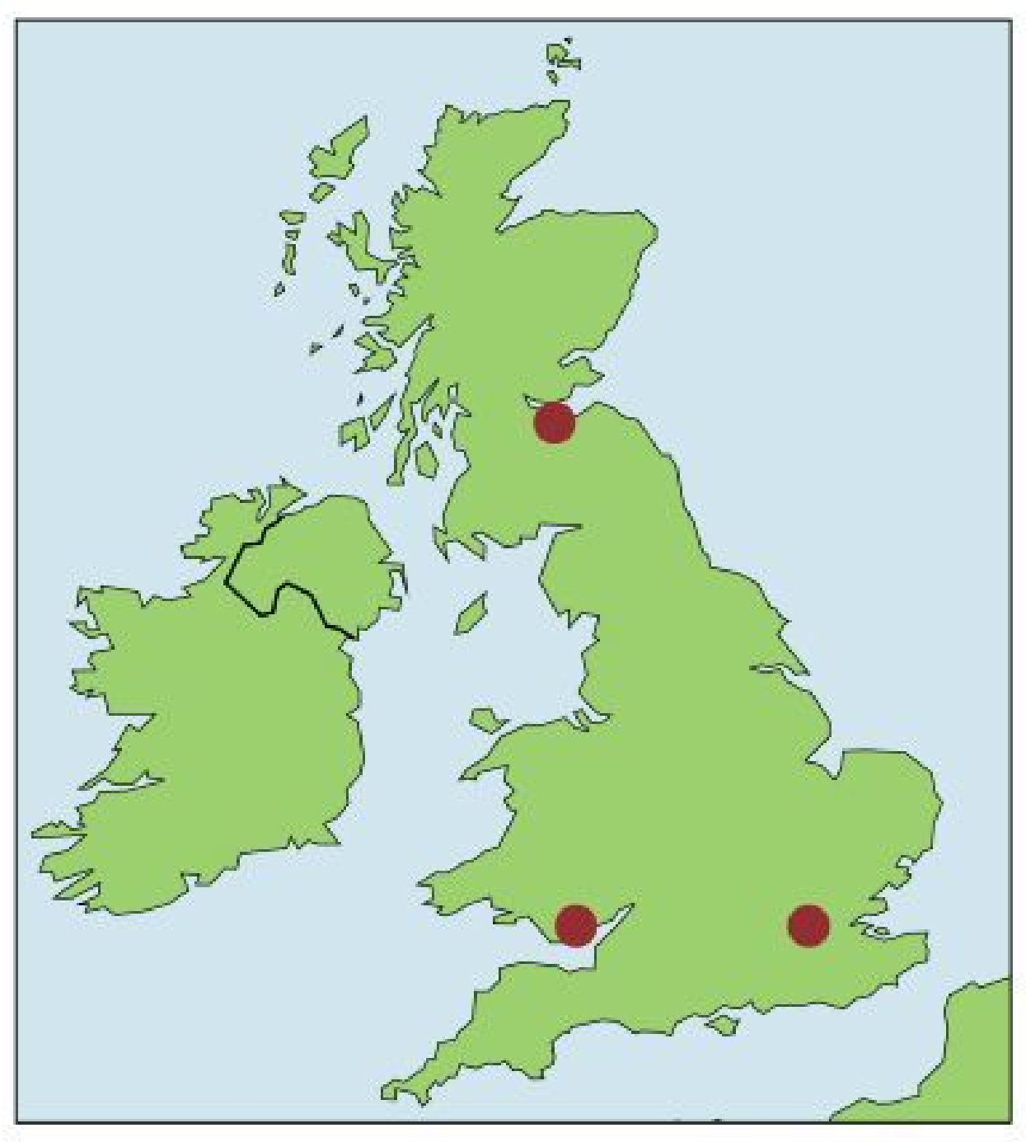
CBA East Midlands

Ice Age Landscape and Culture: Newark Academy, London Road, Newark, 23.11.19

This conference will showcase some of the results from an HLF-funded enterprise to link the Ice Age Journeys project at Farndon Fields with the major Ice Age sites at Bradgate Park and Creswell Crags. The project has focused on mapping the Ice Age landscape, and exploring past culture by making replica artefacts for use in resource boxes for primary schools. Further details will be announced in due course

CBA London

https://archaeologyinlondon.com/



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To include your news here, please write to James Rose at the CBA, at briefing@archaeologyUK.org

● **Exhibitions by Mike Pitts**

CBA North

Our website and emails to members continue with regional news as well as the events and activities of our local group members and others, whilst our own events for the year are being planned - of which details will be announced in due course to members. For further details, news and more please see our website https://cbanorth.wordpress.com/ If you can't see what you want or wish to contribute please feel free to contact us at cbanorth@archaeologyuk.org or contact one of the committee.

CBA North West

http://www.archaeologyuk.org/cbanw/CBANW_notices.html

CBA East South East

Full-day tours to current research excavations and historic sites and towns across the south-east, led by local experts. Tours run until October, with sites ranging from Roman villas to Tudor Palaces. Free to all CBA-SE members, or a small cost for non-members. Limited spaces, early booking is recommended. To book or enquire contact Events Officer, Dr Anne Sassin, at events@cbasouth-east.org
http://www.cbasouth-east.org/events

CBASE 2019 joint annual conference and AGM, Univeristy of Kent, Canterbury, 02.11.19
This year's annual conference "An Archaeological Perspective on links between the South East and the Continent" and AGM will be run jointly with Kent Archaeological Society Fieldwork Committee and set in the cathedral city of Canterbury. For further information contact: membership@kentarchaeology.org.uk.

CBA South Midlands

East Midlands Historic Environment Research Framework: conference, Lakeside, Nottingham, 05.10.19
This conference, hosted jointly by CBA South Midlands and CBA East Midlands, will mark the culmination of a project to focus future lines of research into the historic environment in the East Midlands. It will give examples of some of the best research that has taken place in the past; further details and booking arrangements will appear in due course: https://tinyurl.com/y76l596l

Autumn conference: Winslow Public Hall, Winslow, Buckinghamshire, 20.10.19
Details of our autumn conference will appear as soon as they are available, but save the date in the meantime.

CBA Wales/Cymru

WOOLOLOGY!?, Royal Welsh Winter Fair, Builth Wells, Powys, 25-26.11.19
CBA Wales in conjunction with the Clywd Powys Archaeological Trust will be exploring all sorts of fascinating connections between wool use / sheep rearing and archaeology at the the Royal Welsh Winter Fair. As part of the Council for the Protection of Rural Wales's sponsorship stand for the Woolpacking and Handling competition, the archaeologists will be showcasing the impact of sheep rearing on our landscape and exploring the ways in which humans have used wool for their own ends. This will include looking at archaeological finds, displays of traditional crafts and opportunities to get interactive with fleece! Find us near the Woolpacking competition areas. http://www.rwas.wales/

CBA Wessex

2019 Conference 'Sunrise over the Stones: Recent Research into Neolithic and Chalcolithic Wessex', Kimmeridge House, Talbot Campus, Bournemouth University, 09.11.19
Booking is now open for our 2019 Annual Conference. The conference commences with the lecture, 'Stonehenge Rocks', by Prof Tim Darvill, followed by further distinguished and pre-eminent speakers on the British Neolithic/Chalcolithic. There will be relevant exhibitions, displays and book-sales to browse during refreshment breaks and the CBA Wessex AGM will take place during the lunch break. Tickets £35 for CBAW members, £45 non-members, £20 students, includes lunch and refreshments. Book online: https://tinyurl.com/yyodh8rv
For queries contact Andy Manning events@cba-wessex.org.uk
-wessex.org.uk/events/

Last autumn **St Fagans National Museum of History, Cardiff** completed a major re-invention taking six years and costing £30m. In July it was announced as Art Fund Museum of the Year 2019, an important prize that brings £100,000 as well as prestige. St Fagans began in the 1940s as a folk museum with rebuilt houses furnished with period artefacts. It now has a wider remit, with a heavy emphasis on community engagement. Buildings are still the core of the complex set in 40ha of parkland – including a recreation of Llys Llywelyn medieval royal court excavated at Lys Rhosyr, and a pair of attached Iron Age roundhouses based on evidence from Bryn Eryr, two sites on Anglesey – but new workshops and galleries provide activity spaces for children and adults, and museum conditions for artefacts. Wales' major archaeology displays are now here, with finds such as the Neanderthal remains from Pontnewydd Cave

CBA West Midlands

http://cbawm.archaeologyuk.org/index.php

CBA Yorkshire

Organiser of Pathways to your Past: A workshop to launch and upskill your community history group, Selby Abbey, 21.09.19
For new and established community archaeology and history groups. The day will consist of presentations, displays and exhibitions by archaeological groups with a series of workshops. Designed to help provide advice and skills to community archaeology and history groups to set up and run community archaeology projects from start to finish. Talks on various different aspects including National Lottery Heritage Funding and Community First Yorkshire. Held at Selby Abbey, which is easily accessible and is a 5 minute walk from the station. There is parking in Selby including on South Parade (YO8 4HE) and Back Micklegate (YO8 3GH). Tickets £10-£14
https://tinyurl.com/y57gzzm3

Conferences, Meetings & Lectures

'PKARF: Priorities in Progress' Regional Archaeology Conference

30.08.19, Soutar Theatre, AK Bell Library, 2-8 York Place, Perth

A regional archaeology conference organised as part of the Perth and Kinross Archaeological Research Framework (PKARF). Join Perth and Kinross Heritage Trust for a summary of findings from the first year of knowledge assessment and hear preliminary research priorities presented by leading experts. Contribute to the shaping of the future Framework by joining 'think tank' workshops. Student Attendance Bursaries available to assist with travel and accommodation. For registration details and more information visit: www.pkht.org.uk/pkarf. Free of charge.

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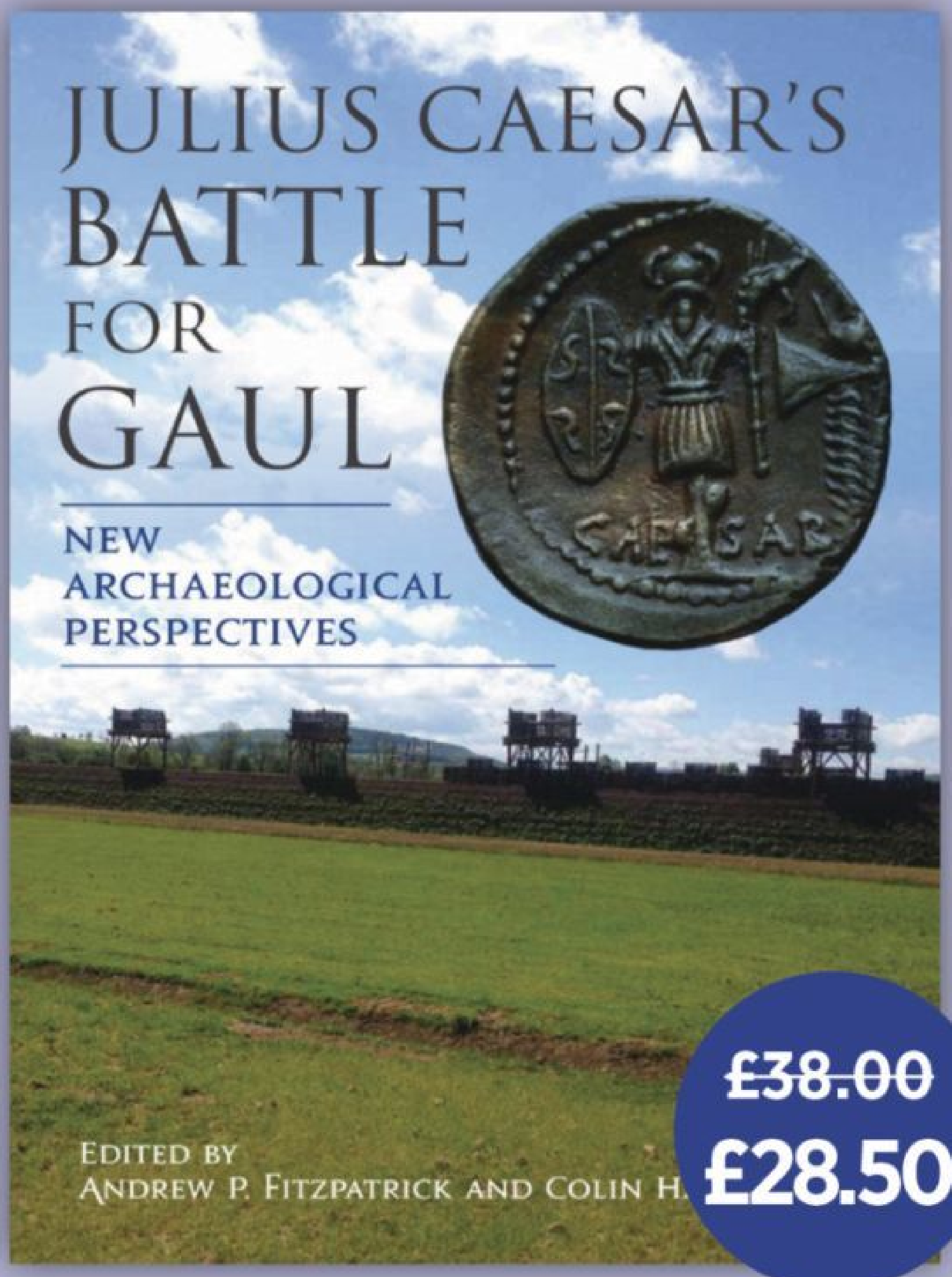

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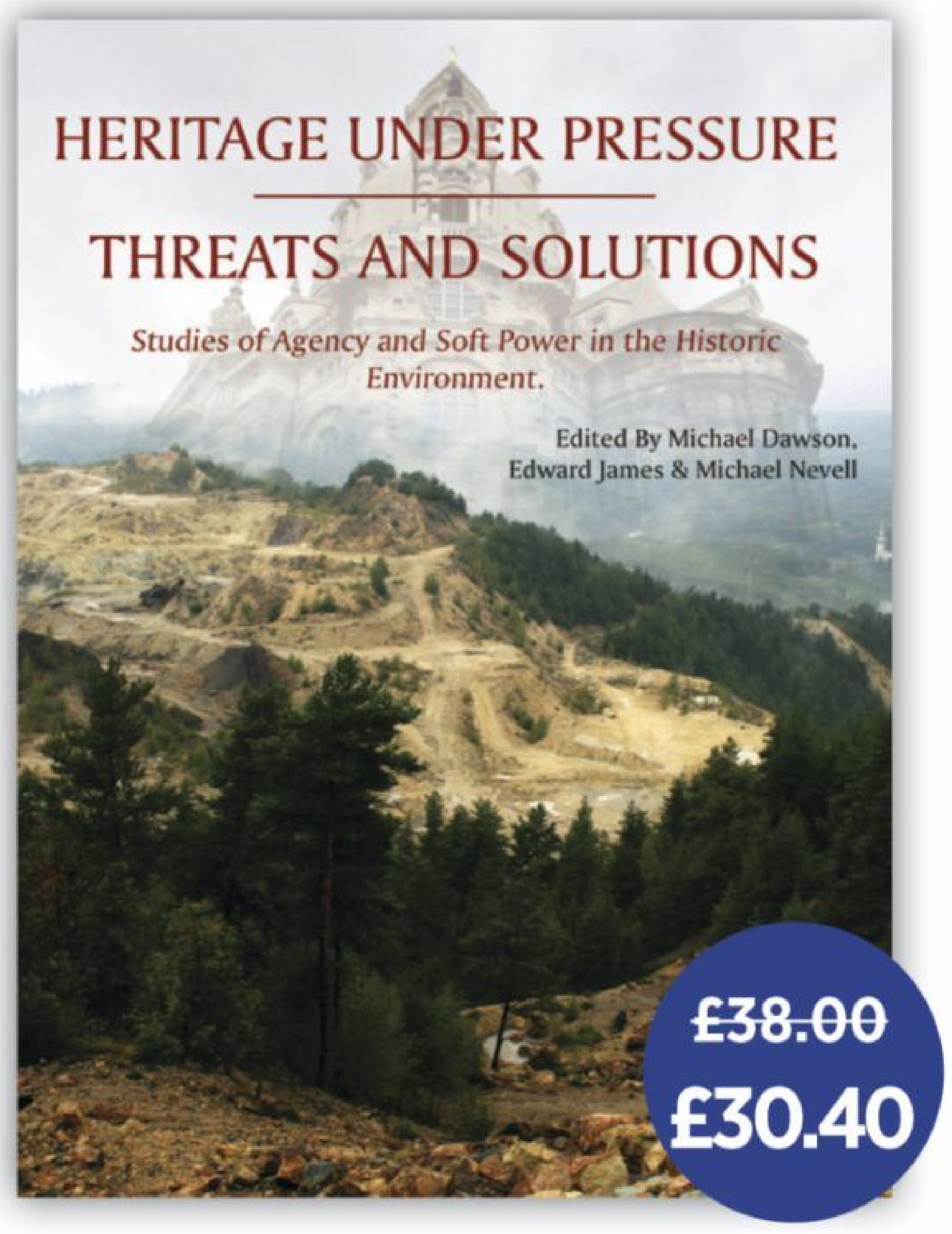

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Call for Papers - Making Your Mark: The first National Symposium for the study of Historic Graffiti

05.10.19, The University of Southampton

In recent decades there has been a steady growth in interest within both the academic world and community archaeology projects in the recording and study of historical graffiti. As such we are launching the first in what we anticipate will become a regular program of historic graffiti symposia, to include academics, archaeologists, scholars, and enthusiasts, to discuss the work that is under way. Call for papers and posters: We encourage established researchers, new scholars, and amateur archaeologists to submit papers and posters for presentation at the symposium. Please click on this link for further information: https://tinyurl.com/y67u694j Send abstracts to cfp@historicgraffiti.co.uk Closing date for papers 14th June. www.historicgraffiti.co.uk

Yorkshire Vernacular Buildings Study Group

12.10.19, The Birchcliffe Centre, Hebden Bridge

Day school from 9.15am to 4.45pm, talks include West Yorkshire Registry of Deeds (West Yorkshire Archive Service); Censuses and house history (Anna Mealia); Land valuation survey 1910-1915 (Mary Twentyman and Barbara Reardon); Probate records (Hazel Seidel); and case studies on Old Town Hall (David Cant) and Higher Kinders (Mike Buckley). To book, send contact details and cheque for £20 payable to Hebden Bridge Local History Society to Rachel Smith, Bramble Dene, Moss Lane, Hebden Bridge HX7 7DS or email membership@hebdenbridgehistory.org.uk for enquiries.

Pitt Rivers Lecture 2019

29.10.19, Bournemouth

The Third Annual Pitt Rivers Lecture entitled “Fire: Friend or Fiend in Human History?” will be given by the internationally renowned anthropologist Professor Ruth Tringham (University of California at Berkeley, USA). It is a free public lecture and will be held in the Fusion Building, Talbot Campus, Bournemouth University, BH12 5BB, at 7:00pm (Displays and welcome reception from 6:30pm). The lecture will explore how archaeologists can and do act as arson investigators many centuries or millennia after the event. It will focus on the burned houses of Neolithic Southeast Europe, and earlier examples in Neolithic Anatolia (Çatalhöyük, Turkey), in order to consider how fire has been managed and controlled, and why fire is chosen as a means of destroying places, be they urban or rural, public monuments, or intimate domestic places. For further details and booking please visit the Eventbrite page at: https://pittrivers.eventbrite.co.uk

The Society for the Study of Childhood in the Past, 12th Annual Conference

30.10.19 – 01.11.19, University of Sheffield

This year’s conference is entitled ‘Rebels Without a Cause? Accessing and Exploring Adolescents/ Adolescence in the Past’. An interdisciplinary and international society, the 2019 SSCIP Conference seeks to explore the many facets of adolescence, and how scholars from diverse fields of research offer nuanced insight into the lives of those occupying this unique stage in the life course in the past. This conference is supported by the Sheffield Centre for the Archaeology of Childhood. Confirmed keynote speakers: Prof. Jane Eva Baxter (DePaul University, USA) and Dr Mary Lewis (University of Reading, UK). For further information visit: https://sscip.wordpress.com and follow us @SscipChildhood

40th Association for Environmental Archaeology Conference

29.11-01.12.19, University of Sheffield

This year’s theme is "Living through change: the archaeology of human-environment interactions". We welcome papers that explore environmental change from the human perspective through engagement with questions of change, adaptation, sustainability and human impact. Early Bird prices are available until 1st September, last booking date is 1st November. https://tinyurl.com/yxct5f2a

Courses

University of Oxford Courses and Workshops in the Historic Environment

Various dates, Oxford

A range of short practical courses to provide training in key skills for archaeologists and specialists in historic buildings and the built environment. Taught at Rewley House with full residential and catering facilities.https://tinyurl.com/y8pnl3le, or call 01865 270 380.

Durham Palaeopath Summer School

12-23.08.19, Durham Univeristy

Palaeopathology is the most direct evidence for health and well being in the past and how it affected their daily lives. A unique opportunity to learn more about palaeopathology. Practical sessions will enable us to be the closest we can get to our ancestors. Applicants need to be 18 years of age or over and have some education in the study of archaeological human remains.The basic fee for the 10 day course is £970. Please contact either Prof. Roberts or Dr Jakob c.a.roberts@durham.ac.uk/ betina.jokob@durham.ac.uk https://tinyurl.com/y3fn7wyx

University of Sheffield: Two Short Courses

10-12.09.19, Understanding Zooarchaeology

This course is directed to students, professionals and enthusiasts who want to discover the fascinating and stimulating world of animal remains recovered from archaeological sites. Please note that this course does not require any previous knowledge of zooarchaeology. The teaching will be delivered through short lectures and hands-on practical activities. £200 (waged); £140 (student/unwaged)

13.09.19, Birds in Archaeology

The course will introduce you to the study of bird remains in archaeology, with sessions on British birds and the species most commonly found in archaeological sites. The course is directed towards students, professionals and bird enthusiasts. The teaching will be delivered through hands-on practical activities, short lectures and case studies. £100 (waged); £70 (student/unwaged)
£260 (waged) for booking UZI and Birds in Archaeology together; £185 (student/unwaged) for booking UZI and Birds in Archaeology together
For further information, please see: https://tinyurl.com/y6sn8tb8

The Centre for Lifelong Learning, University of York

30.09.19 onwards, University of York

Run over 2 years (part-time), by distance learning, the online PGDip in Parish Church Studies: Heritage, History and Fabric allows you to study remotely and be flexible with your learning. Six modules cover a diverse range of subjects to provide an excellent academic grounding in the key issues associated with the changing nature of parishes and parish churches. Residential weekend available. Applications now open. For information or to apply, visit: www.york.ac.uk/parish, Email: lifelonglearning@york.ac.uk Tel: 01904328482.

Recovering Human Remains: Weekend Workshops

19-20.10.19, Winchester

Breaking Ground Heritage is offering a weekend workshop to provide an opportunity for participants to practice the recovery of human remains to professional archaeological standards using staged graves in a WWI scenario. A working knowledge of the processes and the ethical considerations will be covered. This will be of value to those with an interest in British or battlefield archaeology and have little or no experience in excavation techniques. Proceeds to support BGH and assist service veterans in recovery. For more details visit: https://tinyurl.com/kxav9xp ■

An ambitious programme at the **Imperial War Museum, London** (until January 5 2020) features lectures, events and three exhibitions on a common theme, “Culture Under Attack”. “Rebel Sounds” shows (and broadcasts) how people have used music to speak out against war and oppression. The story of the evacuation of art and artefacts away from their city galleries in the Second World War is told in “Art in Exile”. And in “What Remains”, photos, texts and objects highlight historic and contemporary cases of buildings, places, art and artefacts targeted with intent to exploit or destroy particular cultures. “What Remains” is co-curated with Historic England (a first for the public body), and argues forcefully for the importance of heritage and culture in conflict – it matters to aggressors and it matters to the attacked, not just to those who think of culture as a museum experience. This was understood by Daesh, who destroyed the Temple of Bel in Palmyra, Syria (above), and it is good to see the British Armed Forces proclaim the message

Council for British Archaeology

Correspondent

"The best of British archaeology": Mike Heyworth celebrates the astounding range of work across the UK

Above:* Mike Heyworth launches the Festival of Archaeology from the *Sae Wylfing, a half-size replica of the Sutton Hoo ship at the British Museum for the day

The 2019 CBA Festival of Archaeology ran for 16 days in July. It showcased the amazingly diverse range of archaeological work taking place across the UK, with over 1,000 events aimed at a public audience.

The festival's overarching theme was #Archaeotech, providing many opportunities to showcase archaeology in a wide range of creative ways. The launch event at the British Museum featured a day of technology-related demonstrations and displays, including bronze casting and flint knapping outside the front of the museum, and geophysical survey on the lawn. Several members of Channel 4's *Time Team* were on hand to discuss their memories of the TV series and its contribution to the future of British archaeology. The event reached a wide audience visiting the museum from all across the world.

The festival was sponsored by Historic England, English Heritage, Cadw, the National Lottery Heritage Fund, Towergate Insurance Solutions and the Institute of Commercial Management. Plans are already underway for the 2020 Festival, which will be held on July 11–26.

This year the CBA was very pleased to make Ask an Archaeologist Day an official part of the Festival of Archaeology. On July 17 people from across the world asked archaeologists questions using the hashtag #AskAnArchaeologist, and archaeologists shared their knowledge. The event was coordinated on Twitter by @AskAnArchDay.

The concept is based on the hugely successful #AskACurator Day, set up by Mar Dixon, which has run for several years on Twitter. The team at National Trust Midlands came up with the idea for the same sort of day for archaeology, and the CBA worked closely with them to make it a key part of the Festival of Archaeology (see https://festival.archaeologyuk.org/ask).

People all over the world got involved. One primary school teacher in Kent posted questions from her class, all of which received several answers. "They are going to be so inspired!!!" tweeted @SamJ_Reynolds. "And what else is #primaryed for?!"

A Day in Archaeology

As part of the Festival this year, the CBA set up an opportunity for archaeologists all over the UK to

***Right:* Geofizz on the lawn outside the front of the British Museum**

Above: James Dilley of Ancient Craft demonstrates bronze casting

contribute a blog post to A Day in Archaeology website to help show the diverse range of things that archaeologists do (see https://festival.archaeologyuk.org/day). This follows a similar earlier initiative which ran from 2011–17, overseen by volunteers in the UK.

Anyone working, studying or volunteering in archaeology could take part in A Day in Archaeology. Participants were encouraged to record their archaeological day and share it in a blog on the website, or via a link to their own video.

The CBA hopes to use the initiative to demonstrate the wide variety of work archaeologists do in their daily lives, as well as increasing public awareness of the relevance and importance of archaeology to the modern world. The blog posts will also be used by the CBA to create a larger careers resource for archaeology over the coming year, to improve the quality of careers advice to anyone considering a move into archaeology.

Young archaeologists were particularly encouraged to participate, and on the day, the CBA's own social media channels were "taken over" by young people as part of a wider Kids In Museums initiative (see https://kidsinmuseums.org.uk/what-we-do/takeover-day). Event organisers for the Festival of Archaeology were encouraged to run events to attract young people with specific guidance provided (see https://festival.archaeologyuk.org/youth).

Marsh Archaeology Awards

The annual Marsh Archaeology Awards, run each year by the Council for British Archaeology and the Marsh Christian Trust, are now open for nominations for the 2019 awards (https://new.archaeologyuk.org/marsh-archaeology-awards-2019). These will be presented to the winners at the CBA's annual Archaeology Day linked with its annual general meeting, to be held in London on a date to be confirmed in mid-November.

Following on from the successful awards presented at the 2018 AGM, this year there will be four categories: Young Archaeologist of the Year, Community Archaeologist of the Year, the Marsh Award for Community Archaeology (presented to a project/group), and the Marsh Award for Early Career Research in Archaeology. The latter is a new award, for an early career contribution to archaeology that is judged to be outstanding or exemplary with single or ongoing impact on the discipline. The award is "open", and not restricted to any particular area of archaeology. Nomination forms are now available on the CBA website and the deadline for entries is September 15 2019.

British Archaeological Awards

The charity which has run the biennial British Archaeological Awards (https://www.archaeologicalawards.com/) since 1976 was wound up in early July, and the remaining assets were passed to the CBA. This follows discussions in recent years about the future of the awards and the acceptance by the members of the charity of a proposal from the CBA at the 2019 AGM to take them forward in the future.

The CBA intends to work closely with Archaeology Scotland, CBA Wales and partners in Northern Ireland to deliver the British Archaeological Awards, with a ceremony rotating around the four countries of the UK. The next one is likely to be held in Scotland in partnership with Archaeology Scotland.

The awards will be managed by the CBA, guided by an Advisory Committee made up of UK archaeologists from various sectors of our community. Further details will be published later this year in advance of nominations opening for the 2020 awards – which will celebrate work undertaken or completed over the last two years.

The CBA is seeking financial support and further partners to deliver the awards, so please do get in touch if you are able to support the aim to celebrate the best of British archaeology.

Mike Heyworth is director of the Council for British Archaeology ■

Above: Roman gladiators entertain festival visitors

Below: Festival stalls for the Young Archaeologists Club and the Council for British Archaeology in the the British Museum's Great Court

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ADAM STANFORD [5]

Knowledge comes last in the race to sell antiquities

Another magazine, and another prominent antiquity shows up in a saleroom, makes headlines and disappears again. Well two, actually. On July 2 Sotheby's sold an ivory chess piece for £735,000. Two days later, again in London, Christie's raised £4.74m for a carved stone head of Tutankhamun.

There are unanswered questions around both sales, which, one might think, did little to respect antiquity or very rich people. The two stories have much in common, starting with that old bugbear, provenance.

For salerooms, provenance means ownership, which we'll get to, but we'll start with the archaeological definition, which is about where things came from – the context in which they had finally departed from the time when they were made and used. Unsurprisingly (this is a world where what matters is money and looks, not knowledge) there is almost no information on this for either object.

The chess piece, confirmed to have been made from walrus ivory which has been radiocarbon dated to AD1280–1480, looks like "warders" in a famous collection found in 1831 in Lewis. The record of that hoard's discovery is poor, but a study by David Caldwell, Mark Hall and Caroline Wilkinson in 2009 concluded that 93 pieces were kept, and 93 are now in the British Museum and the National Museum of Scotland. However, they suggest there were originally four chess sets, leaving four warders and 44 pawns missing.

None of the known Lewis pieces has been dated, so chronology is dependent on style. Caldwell and colleagues think they were perhaps made in Norway between "the second half of the 12th century into the early 13th," making Sotheby's 14th-century radiocarbon determination significantly different. Otherwise it's possible to imagine the new piece also having been found in Lewis in 1831.

That's far from saying that's where it came from, however, and the very mastery of the carver's art seen among the 93 implies there must have been many more sets made. More research could dispel much uncertainty, but the piece was taken to market too fast. And it is for this reason that both National Museums Scotland and the British Museum declined to bid: in the words of the Edinburgh museum, the warder's "authenticity or its connection to the Lewis hoard or to Scotland… cannot be proven beyond reasonable doubt… [without a] considerable programme of research". Setting itself against two museums of world renown, Sotheby's encouraged buyers to think otherwise. It remains to be seen whether the currently anonymous owner will want to pursue the matter.

Of the stone head, there is simply nothing to say in this respect. It looks like Tutankhamun, said Christie's, so it must have come from ancient Egypt. The Egyptian authorities agree, and are not happy: they believe it was stolen and illegally exported.

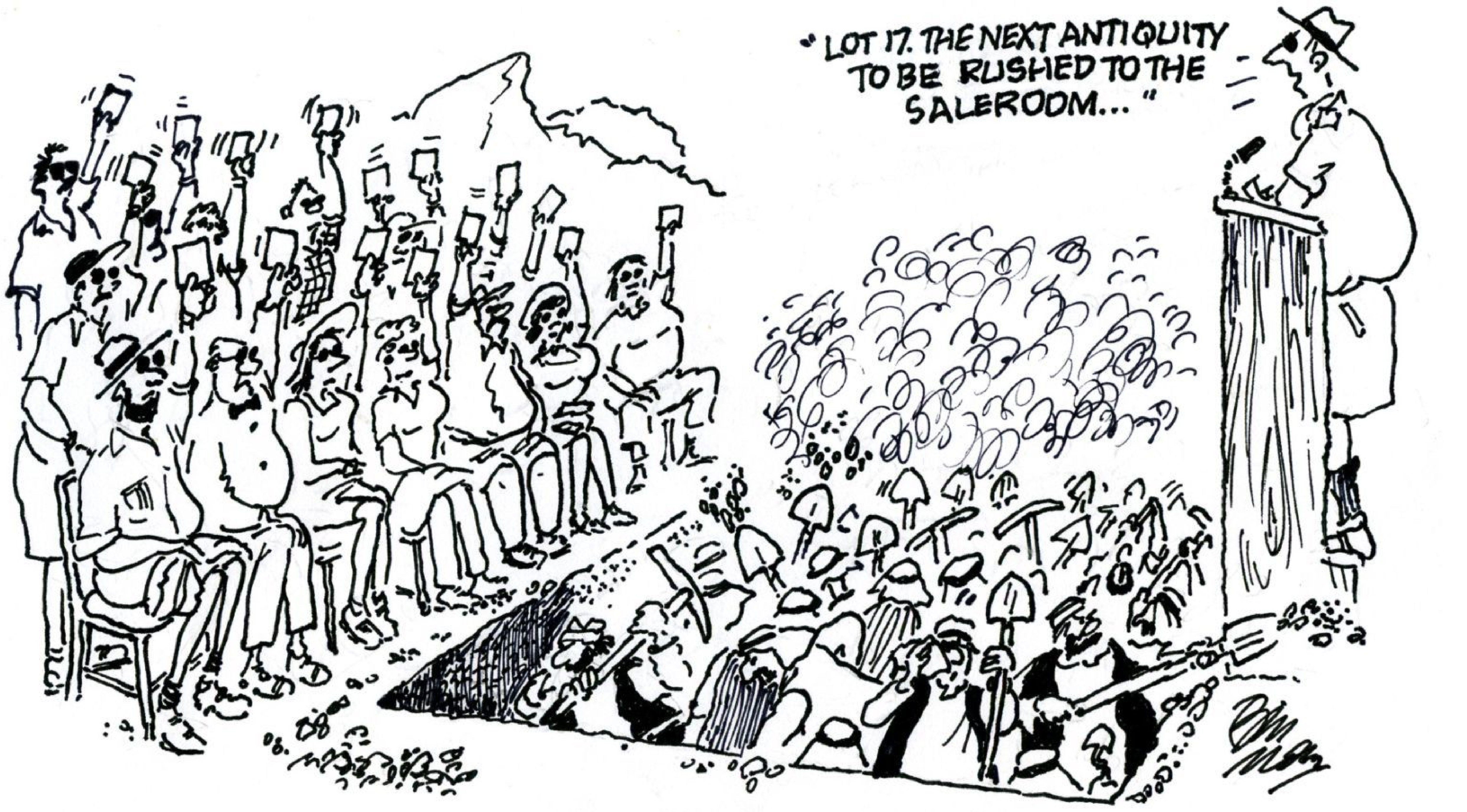
An undocumented artefact for sale needs to have left its country of origin before 1970 if it is to satisfy the relevant Unesco convention. Christie's said it "understood" the head had been "in the collection" of Prinz Wilhelm von Thurn und Taxis "by the 1960s". Writing for *Live Science* (June 25), Owen Jarus tracked down descendants of the prince, a historian who knew him and an Egyptologist who studied the statue in the 1980s. None remembered Wilhelm having anything to do with it or any interest in antiquities.

Christie's was more confident about the head's post-1970 ownership, listing three dealers including Heinz Herzer, from whom the latest seller acquired the head in 1985. Herzer is associated with a number of questioned antiquities sales, not least an ancient bronze statue of a youth, bought by the J Paul Getty Museum in 1977 and the subject of decades of police enquiries. Egypt has asked Interpol to investigate.

The chess piece's story is also curious. It was sold by the family of a man who bought it from an Edinburgh dealer in 1964, for £5. No one apparently knew it to have anything to do with Lewis, despite the hoard's fame and, already in 1964,the children's TV show, *Noggin the Nog,* and chess-inspired movies.

With both chess piece and head, the auction houses' claims to care deeply about provenance, authenticity and ownership would have carried more weight had they allowed time for proper research. The same could be said of another sale, on July 3 (it was a good week for wealthy collectors), of a hoard of Roman bronzes found in Gloucestershire in 2017. It contained a spectacular dog (pictured in First sight Nov/Dec 2017/157). Any hopes that Bristol City Museum might have acquired it were dashed when it sold for £137,500, three times the estimate.

Christie's had thrown in the rest of the hoard, which itself contained many unusual pieces – under proposed changes to the Treasure Act, this might have been classed as Treasure and so avoided its saleroom vanishing trick (feature May/Jun 2019/166). Unless the new owner returns these other pieces to the museum, however, we'll never know their full story. There just wasn't time to research them. ■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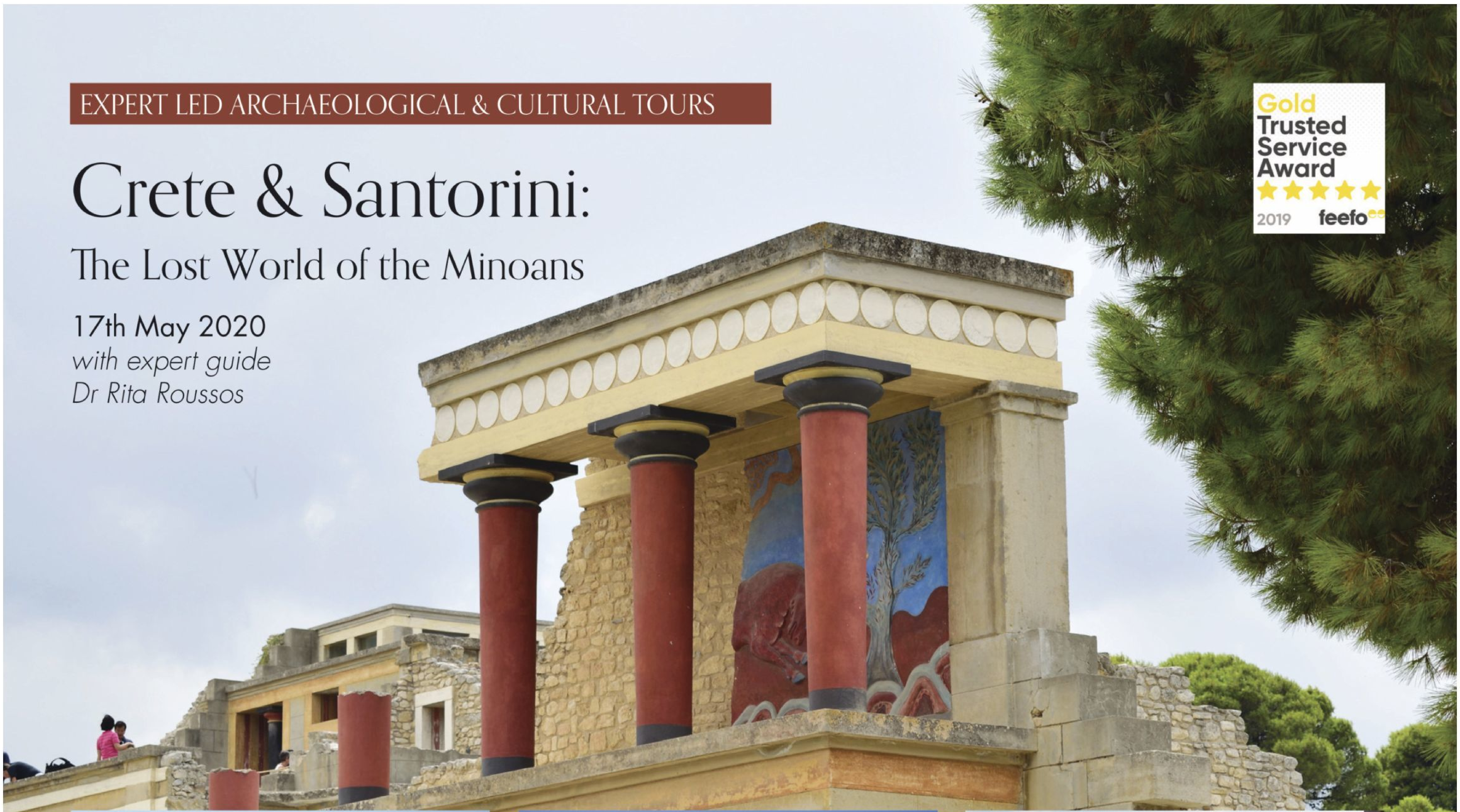

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